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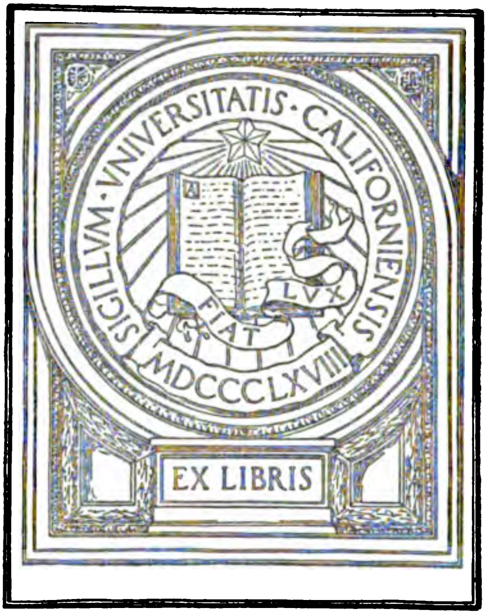

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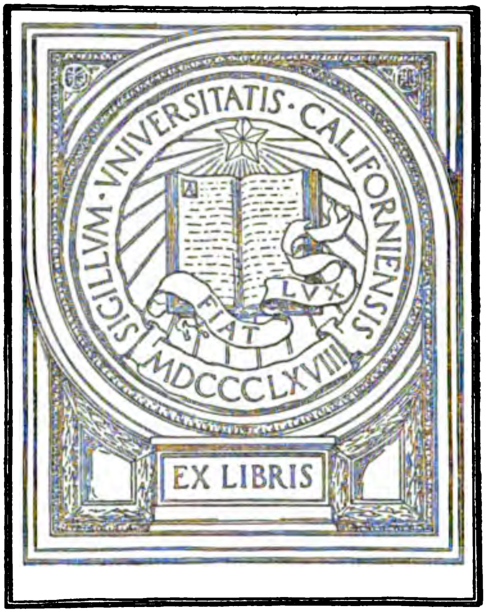

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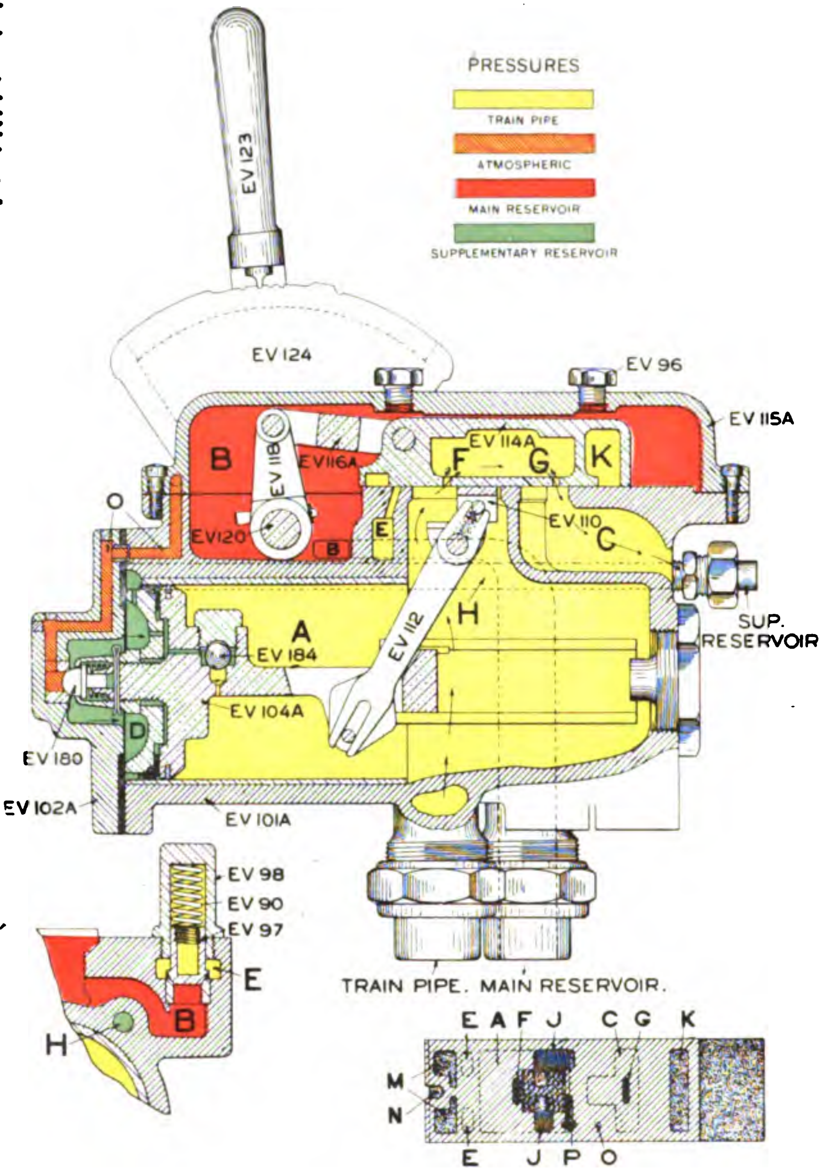

Locomotive Firemen's Magazine Educational Charts

NEW YORK AIR BRAKE SERIES

PLATE X—ENGINEER'S BRAKE VALVE, STYLE B

(Service Graduating Position)

UNIV. OF

Entered December 4, 1902, at Indianapolis, Ind., as Second-class Matter, under act of Congress of March 3, 1879

VOL. 39 No. 1 INDIANAPOLIS, IND. JULY 1905

Plate X—Engineer's Brake Valve, Style B (Service Graduating Position).

Plate X of the New York Air Brake Series of the Locomotive Firemen's Magazine Educational Charts shows the brake valve in service graduating position.

As may be seen from the plate, the service position is subdivided into five service graduating positions. This subdivision is to enable the engineer to make service applications of any required degree of force, and to allow the valve to automatically lap the brake-pipe service exhaust port *F*, when the required service reduction has been made.

For all ordinary brake work the service position of the brake valve is used, but the service graduating notch which should be used depends somewhat on the number of cars in the train, the speed and the grade. For instance, when the train consists only of the engine and one or two cars, the initial service reduction should always be made in the first graduating notch of the service position. This is to prevent possible quick action on the train, which might be had should any of the quick-action triples be in poor condition from lack of proper cleaning, attention, or other cause.

Should the train consist of more than six or eight cars, however, the initial brake-pipe reduction should not be made in the first service graduating notch, but, instead, the handle should be moved to the second graduating notch, or beyond, depending on how heavy an initial reduction the speed and grade determine it is desirable to make.

The reason for not using the first service graduating notch when making service applications on trains consisting of six or more cars is, the reduction in brake pressure through a given size of opening is slower the greater the brake-pipe volume to reduce from, and as port *F*, the service exhaust port in the main slide valve, is only about half opened when the handle is placed in the first service graduating notch, the reduction in brake-pipe pressure would be comparatively slow and there would be, on account of this slow reduction, danger of waste of air through the brake cylinder leakage grooves and, consequently, loss of cylinder pressure.

In Plate X the handle is shown in the third graduating notch. In this notch the main slide valve *E V 114 A* is moved backward on its seat to carry port *F*, in its face, away from the small graduating, or cut-off slide valve, *E V 110*, far enough to give it full opening. This permits the brake-pipe air, as indicated by the arrows, to flow through ports *F* and *G* to the service exhaust port *C* and the atmosphere, causing a reduction at the required rate in brake-pipe pressure to apply the brakes properly.

From the diagram of the valve face and seat (lower right-hand view) it will be seen that the small passage and port *O*, always open to the atmosphere in release, running and lap positions, leads from chamber *D* and the supplementary reservoir, and is blanked so as to prevent the escape of chamber *D* air.

As chamber *D* and brake-pipe pressures are always equal before the handle is placed in the service position, it can be seen that, as the brake-pipe pressure reduces from chamber *A* through port *F*, chamber *D* pressure will act upon piston *E V 104 A* and force it forward. The effect produced by this piston moving forward will be shown in Plate XI.

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A Prearranged Collision.

As a demonstration of the improvements which have been made in American railway appliances tending to reduce, if not entirely prevent, the resultant damage to rolling stock in case of collision or derailment, the Westinghouse Company gave an exhibition on the Interworks Railroad in May last showing the effects of a collision between standing and moving cars equipped with the Westinghouse friction draft gear. A press dispatch dated Pittsburg, May 18, 1905, says:

"In the presence of 300 delegates to the International Railway Congress, George Westinghouse showed how easily a collision may occur without causing any damage. A collision, arranged for the visitors, took place on the Interworks Railroad.

"A train was made up of fifty steel cars. This train was divided into three sections. Two of the sections were allowed to remain stationary on the track, with a space of about fifty yards between them. The third section, with an ordinary engine attached, was then drawn away a distance of two miles.

"The engineer pulled open the throttle and the section of the train dashed down the track at a speed of forty miles an hour. There was a crash as the rear of the moving train dashed into the cars which were standing on the tracks. But instead of the cars piling up on the tracks in a twisted mass, there was just a slight quiver as the three sections bumped, and then they settled down on the track again, coupling together automatically. The cars and engine were equipped with a friction draft gear, which it is asserted will absolutely prevent wrecks of this kind.

"After the first test, Mr. Westinghouse had attached to the train a single phase electric locomotive, and the same experiment was made. This is the first time that an electric locomotive has ever drawn such a number of cars. The visitors were astounded at the success of the experiment."

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A Speed Contest.

The speed contest which is now on between the Lake Shore and Michigan Southern (New York Central Lines) and Pennsylvania Railroads in an effort to reduce the time between Chicago and New York City to the lowest possible notch consistent with safety will be watched with much interest by the traveling public. The Pennsylvania is the shorter line by about 80 miles, but has some mountainous grades to contend with, while to offset this the Lake Shore traverses a more level stretch of country. Some very high speed records have already been made by both lines, one to three miles having been reeled off at the rate of 28 seconds per mile or about 120 miles per hour.

Relative to the above, the Columbus (Ohio) Evening Dispatch says:

" . . . . The traveling of this distance, nearly a thousand miles, in less than eighteen hours marks an era in railroad transportation, for it establishes a record not only for this country, but for the world. It is not a reckless experiment; it is, instead, something toward which railroad managers have been working for a number of years. Three years ago a twenty-hour train was tried, but abandoned because the tracks were not in suitable condition and the traffic was too heavy. Since then there has been an increase in trackage and a perfection of road-building and management to make this phenomenal speed possible.

"The service comes in response to a genuine demand for fast travel, for there are business men who have interests in both cities which can best be attended to personally. These trains make it possible for a man to do business in New York one day and in Chicago the next or vice versa, spending but little more time on the train than he would at a hotel where he might dine and pass the night. This is important to many men who are engaged in the fierce rivalries of modern affairs. It is a facilitating of their business without any special wear and tear upon them.

for while the distance is being annihilated, they are comfortably, even luxuriously, cared for and may, if they wish, do business on the train."

* * *

*The International Railway Congress.**

The International Railway Congress of 1905 has passed into history. This was the first meeting of the congress in America, and from expressions heard from foreign delegates it was by long odds the most interesting and important meeting ever held.

The Railway Appliance Exhibition, held in connection with the congress, was a unique feature, and will long be remembered as the greatest show of its kind the world has ever seen. It was a remarkable exhibition of American ingenuity and achievement, and particularly impressed the foreign visitors. The exhibit was peculiarly an American idea. Nothing of this character had ever before been made in connection with the meetings of the Railway Congress. Our American manufacturers and inventors determined to make this first meeting of the congress in America an occasion to be remembered, and they certainly succeeded. One of the prominent foreign delegates, a high official of the Holland railways, said to me: "This is the greatest exhibition the world has ever seen. It is a revelation to me. I attended the Paris Exposition, and thought they had a grand exhibit there, but this beats it beyond comparison. Why, I have seen things here the very existence of which I never dreamt of before, and I am more than ever impressed with the ingenuity and enterprise of the American people." This delegate expressed the sentiment of the entire body of foreigners that attended the congress.

WILLIAMS' WHARTON COMPANY'S EXHIBIT OF RAILWAY FROGS, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905

The exhibition was held on government property, in the rear of the White House, right under the shadow of the Washington Monument. One of the nightly features that commanded attention was a mammoth searchlight trained upon the top of the monument, which made that impressive object appear like a gleaming beacon in the sky, visible from nearly all parts of the city. One of the conditions on which permission to use government property was given was that the grounds were not to be occupied before March 20th, and were to be turned back to the government in their former condition on May 23d. On March 20th the committee in charge began work, and in the short space of 43 days the great mass of buildings and booths were completed and all exhibits were in proper place, ready for the opening of the exhibition on May 3d. This was a marvel of achievement, only to be properly realized by one who saw the exhibition and noted its scope and extent. The work of dismantling and restoring the grounds to their former condition was, if possible, more marvelous. The exhibition was officially closed at 6 p. m. on May 12th, and in ten days thereafter every vestige of its presence had disappeared. The grounds were as they had been previous to March 20th, with nothing to indicate that they had been the scene of one of the greatest railway appliance exhibitions in the history of the world.

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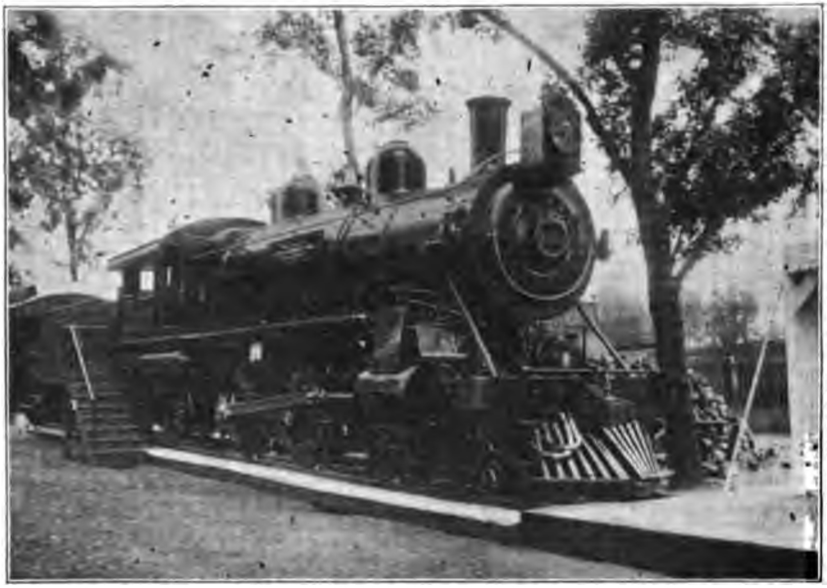
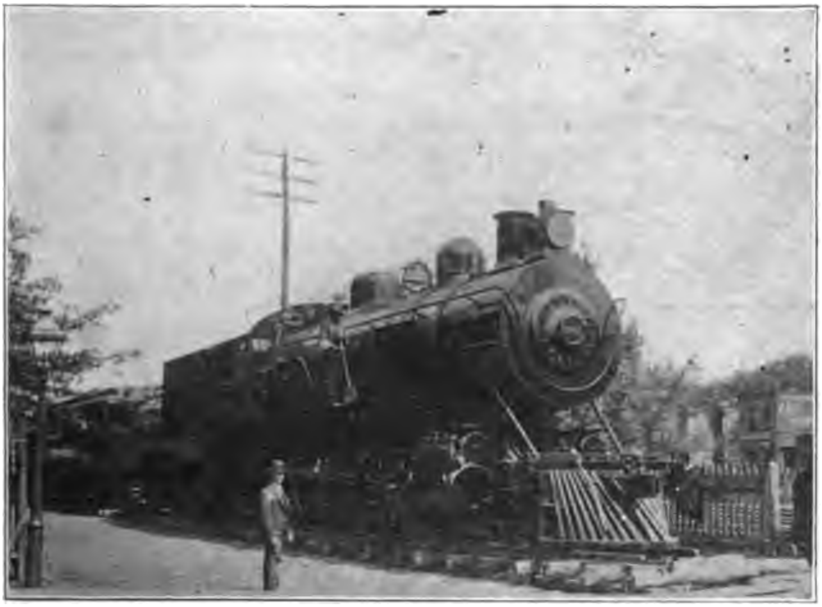
*Special correspondence to the Locomotive Firemen's Magazine by W. P. B.

It is impossible to give a detailed description of the exhibits, they were so bewildering in extent and character; even those things which particularly interest enginemen could not be specified within reasonable limits. The locomotives, views of which appear herewith, attracted particular attention; the fine lines of the balanced compound, Atlantic type, high-speed locomotive, built by the Baldwin Locomotive Works for the Pennsylvania Railroad, was the admiration of railroad men. She looked like a well-groomed racehorse, and when told that she was able to do 100 miles an hour with ease one did not feel greatly inclined to doubt the statement. Total weight of engine, 202,000 pounds; weight on drivers, 120,000 pounds; total weight of engine and tender, 335,000 pounds Cylinders: High pressure 16 inches by 26 inches, low pressure 27 inches by 26 inches. Drivers 80 inches. Boiler 76 inches diameter, 205 pounds steam pressure. Firebox 111 inches by 72 inches; grate area 55.5 square feet; 265 tubes 2¼ inches diameter, 17.8 feet long. Heating surface, flues 2,698 sq. feet, firebox 166 sq. feet, total heating surface 2,864 sq. feet.

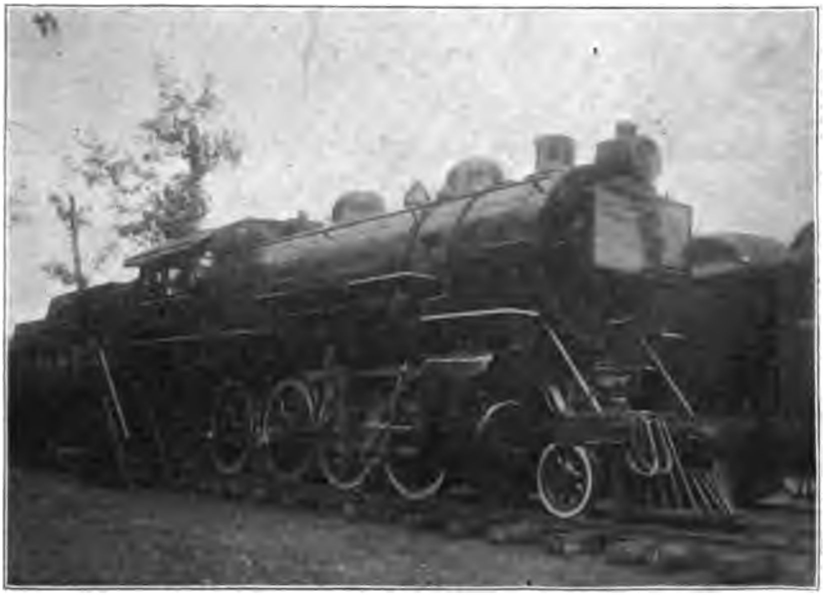


BALANCED COMPOUND LOCOMOTIVE, BUILT BY BALDWIN LOCOMOTIVE WORKS FOR PENNSYLVANIA RAILROAD, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905

The mammoth oil burning locomotive built by the Baldwin Locomotive Works for the Southern Pacific Railroad, gave one an impression of power. This is a



OIL-BURNING LOCOMOTIVE, BUILT BY BALDWIN LOCOMOTIVE WORKS FOR SOUTHERN PACIFIC RAILROAD, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905



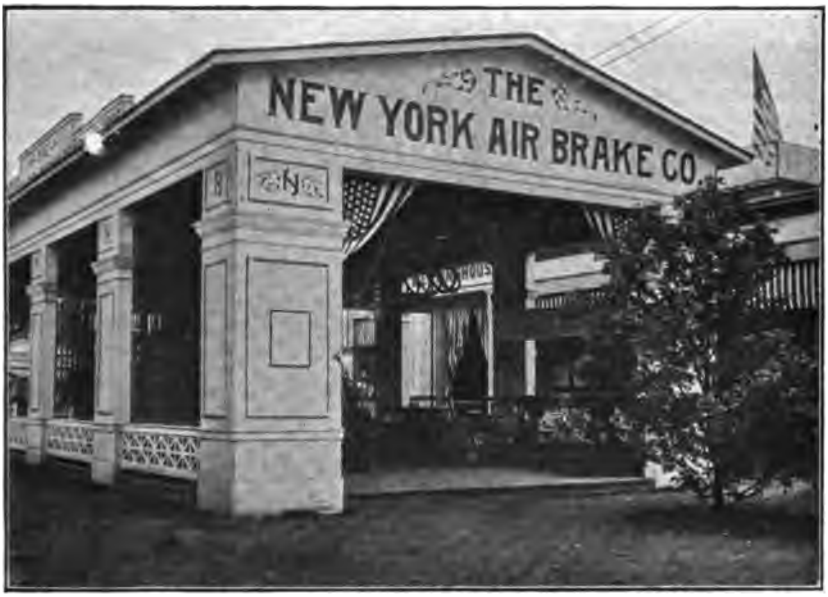
CONSOLIDATED LOCOMOTIVE WITH WALSCHAERT VALVE GEAR, BUILT BY AMERICAN LOCOMOTIVE COMPANY FOR NEW YORK CENTRAL RAILROAD, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905 consolidated type of engine, with Vanderbilt tank. Piston valves. Cylinders 22 inches diameter, 30 inches stroke. Weight of engine, 125 tons; weight of drivers not known; total weight of engine and tender in working order 187 tons. Water tank capacity, 7,000 gallons; oil tank capacity, 2,940 gallons. Equipped with New York automatic and straight air brakes. Nathan bull's-eye sight feed lubricators.

WESTINGHOUSE COMPANIES' EXHIBIT, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905

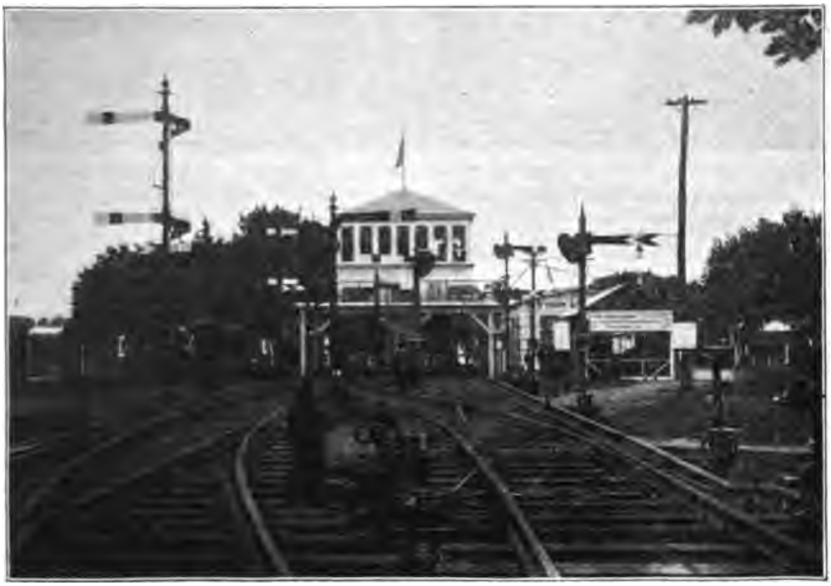
New York Central locomotive No. 2749, built by the American Locomotive Company, attracted particular attention because of the oddity of her valve motion—the Walschaert. What peculiar advantage is claimed for this motion I do not know. It is largely used in Europe, and I remember that more than twenty years ago some of the wind-jammers on the old Denver, South Park and Pacific were equipped with it. This is a consolidated type of engine, with piston valves, and is said to be one of the most powerful engines of this type ever built, but unfortunately I failed to secure dimensions and other details.

Probably the most complete single exhibit on the grounds was that of the Westinghouse Air Brake Company. This company's exhibit included one of its most elaborately fitted up instruction cars, in charge of Mr. I. N. Brown. This car was one of the great points of interest for the numerous railroad employes who visited the grounds, and was thronged with visitors at all hours. The New York Air Brake Company also had a fine exhibit, but lacked the instruction car feature.

Probably the greatest interest displayed in any one feature was devoted to the different signaling exhibits and devices for establishing train control. Many of these were highly ingenious. The General Railway Signal Company had a block signal tower, and a complete automatic signal system in working order. An electric motor car ran up and down the track, actuating the signals and illustrating the points of the system. This exhibit was thronged with visitors at all hours. The Hall Company and the Union Switch and Signal Company also had fine exhibits, including staff machines for the protection of trains on single track roads. The exhibit of this character which attracted the most attention, however, was that of the Kinsman Block System Company. By the

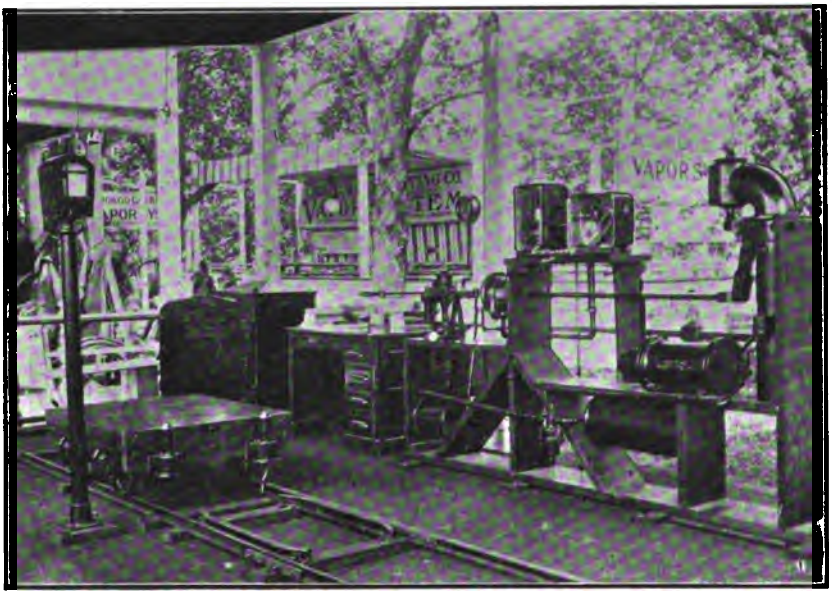


NEW YORK AIR BRAKE COMPANY'S EXHIBIT, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905



GENERAL RAILWAY SIGNAL COMPANY'S EXHIBIT, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905

Kinsman method of train control human fallibility seems to be entirely eliminated. The device unerringly closes the throttle on the engine and sets the brakes on the train, without any action on the part of the engineer, whenever there is an open switch, an open drawbridge, a broken or displaced rail, or an obstruction on the track in the section of track adjoining the one in which the train may be at the time. Moreover, in doing this, the apparatus does not take the control of the train away from the engineer for a moment, as all he has to do is release his brake in the ordinary way, open his throttle again, and proceed as before. This device is now in use on the New York Subway, and already has an enviable record for simplicity and effectiveness. It is perfectly adapted for steam roads, and may be used in connection with any signal system.



KINSMAN AUTOMATIC BLOCK SYSTEM, AMERICAN RAILWAY APPLIANCE EXHIBITION, WASHINGTON, D. C., MAY, 1905, SHOWING APPARATUS FOR AUTOMATICALLY CLOSING THE THROTTLE AND SETTING THE BRAKES IN CASE OF DANGER, AS NOW IN USE ON THE NEW YORK SUBWAY SYSTEM

An exhibit that attracted the attention of many of the fireboys was an automatic stoker in full operation. It struck me that this device was not calculated to greatly reduce the labors of the fireman, as it requires quite as much labor to feed the stoker as to feed the firebox, especially as particular care must be taken to break the coal in small pieces of a fairly uniform size.

Admission to the grounds was by cards, which could only be obtained from the committee. These cards were of two kinds, season tickets, colored white, and daily admission cards, colored green. So great was the demand for admissions that the committee found itself unable to meet it. The original supply of cards was exhausted on the second day of the exhibition, and a new supply had to be provided. The committee had also to limit the attendance, especially to the evening exhibitions, and an order was issued that only season ticket holders would be admitted after 6 p. m. In spite of this limitation the grounds were uncomfortably crowded every evening.

The cost of this exhibition, which was borne by the Railway Supplymen's Association, must have been enormous. One of the supply men told me that it would not be less than a half million dollars, and he was wondering where the profit was going to come from. Looking at the matter from this standpoint, that of dollars and cents, it is probable that the exhibition was immediately a losing venture, but when its great educational value is considered, and the influence it must have exercised upon the ideas of foreign railroad men of high standing, it would seem that the money was well spent.

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Train Movements by Wireless Telegraph.

After experiments, and as a result of a test made with the wireless telegraph on one of its limited trains running between Chicago and St. Louis on June 8, 1905, announcement has been made that the Chicago & Alton Railroad will in the near future install a system of wireless telegraph on all its trains running between those cities, and eventually extend this new innovation to its entire system. On the date above mentioned the limited train carried an observation car equipped with wireless telegraph apparatus, by means of which it is said that messages were sent and received while the train was running at a speed of fifty miles per hour without any inconvenience. President Felton, of the Chicago and Alton Railroad, is quoted as saying:

"This is the first time that the wireless system has ever been used to communicate with persons on a moving train. The experiment was so successful that in a very short time we shall be handling all our train orders over the wireless system. The dispatcher will thus be able to reach any train at any time he pleases. Trains running in close proximity to each other will also be able to exchange messages, as we will have telegraph operators on all freight as well as passenger trains. With this system we believe that collisions will be absolutely impossible."

The Union Pacific Railroad has also been experimenting with wireless telegraphy, as will be seen from the following press dispatch dated Omaha, June 13, 1905:

"The Union Pacific Railroad may establish wireless telegraphy on its through trains from Omaha to San Francisco and Portland. The company is now experimenting with a system of wireless signaling in which the apparatus is attached to the engine cabs. It signals the approach of another locomotive bearing similar attachments. If the device is practicable the overland limited trains will be equipped with the attachments, which will be extended so that an operator will accompany each train and receive and transmit commercial telegrams to stations. The experiments are making in the railroad shops in Omaha."

If these experiments prove entirely successful and the adoption of the new system is found to be practicable beyond a doubt, it will prove to be one of the greatest benefits of modern times, for with train crews in constant communication with each other and with the officials of the road, collisions and the resultant loss of life and damage to property should be well-nigh impossible.

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A Question on the New York Brake Valve.

A member has sent in the following question on the New York brake valve (Vaughn-McKee), 1902 Model, together with the answer, and requests that the answer be withheld until a following issue to demonstrate the ability of the firemen to give the correct answer:

"An engineer reported that he could only get 6 to 8 pounds reduction in train-line pressure from a 1902 Model New York brake valve, even when the handle was placed in the last 'service' notch. What was wrong with the valve?"

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Exhibits of the Union Switch and Signal Company, American Railway Appliance Exhibition.

The following interesting article descriptive of the exhibits of the Union Switch and Signal Company at the American Railway Appliance Exhibition, held in connection with the session of the International Railway Congress, at Washington, D. C., in May, 1905, has been kindly furnished by the Westinghouse Companies' publishing department:

The exhibits of the various automatic and interlocking signal and switching devices of the Union Switch and Signal Company in the Westinghouse pavilion at the International Railway Congress included the well-known types of its electro-pneumatic and all-electric semaphore block signal and high speed electric train staff systems, new forms of Kopp glass lenses, and an important new system of all-electric interlocking of novel interest. The exhibit of the company's train staff system was of especial interest in connection with the announcement of the contract recently awarded to this company for the equipment of about one hundred and ten miles of the Southern Pacific Railroad, between Rockwell and Truckee, with seventy-four high-speed absolute instruments and twelve permissive attachments, by far the largest order ever given for a train staff installation.

Electricity is the motive and controlling force for both the operation and the indication of the switches and signals in the new system of all-electric interlocking, which was demonstrated in the exhibit in an operative arrangement of a short track section complete, with a full-sized railroad switch and switch lever, the latter fitted with an automatic device for completing the stroke after the switch has been operated. It has been a very easy matter to adapt electric motors to the operation of switches or signals, but it has been a problem of extreme difficulty to apply the all-electric system for certain and trustworthy operation of lever interlocking for the indication of the switch or signal operations. This problem has been satisfactorily solved in the system on exhibit by the use of currents of one character for the operation of switches and signals and currents of an entirely different character for actuating the indication mechanism, direct current for the former and alternating current for the latter purpose both being obtained from the same source—generally a storage battery—the direct current being converted into an alternating current at the proper time and in the proper circuit by a very simple method adding nothing to the cost or complication of the apparatus. The use of currents of different character for operation and indication is an absolute safeguard against false indication which might otherwise result from faulty insulation, and the protection of the switches and signals against improper movement which might result

UNION SWITCH AND SIGNAL COMPANY'S EXHIBIT, WESTINGHOUSE PAVILION,
AMERICAN RAILWAY APPLIANCE EXHIBITION,
WASHINGTON, D. C., MAY, 1905

from stray currents through faulty or broken-down insulation is secured by means of a magnet cut-out in connection with each switch and signal, which opens the circuit when a wire leading to it becomes crossed with a live wire, the cut-out acting independently without affecting any other switch or signal in the system, a decided improvement over anything heretofore known or used for the purpose. The motors for operating the switches and signals are of the rotating armature type, the armatures connected with the mechanism to be moved by means of electro-magnetic clutches, which afford a very simple and reliable means for connecting and disconnecting and are at the same time a safeguard against shocks against the mechanism which might result from the obstruction of the switch points in any way. The lever machine is operated by vertical alternating current motors at the back, equipped with vertical shafts to which are applied ordinary ball governors, the indication latches on the lever quadrants being raised when the motors revolve and the governor balls fly apart, and the stroke of the lever being completed manually or automatically.

Three different forms of Union electric block signal semaphores were included in the operative display—a two-position automatic instrument, a three-position automatic instrument, and a two-arm interlocking signal. The Union all-electric signals have been widely installed since their introduction a few years ago, over 8,000 having been sold to date.

The exhibit of the Kopp signal glass included important new forms of dioptric lenses, with five steps, to take the place of the lenses of three refraction steps formerly sold, the new design being introduced to eliminate any possibility of the distortion of refracting surfaces sometimes resulting in old style lenses through the "settling down" of the three high steps as to produce concave elevations. The absolute quality of the Kopp "solid-red" signal glass was demonstrated in an interesting manner at the exhibit through the use of a spectroscope pointed at Cooper Hewitt mercury vapor lamps hung overhead. The Cooper Hewitt lamp, as is well known, emits no red rays, and as Kopp "solid-red" lenses will transmit no other color, the brilliant actinic light of the mercury lamp is completely obscured when the Kopp glass is placed between it and the spectrum.

*Examination Questions for Firemen, and Their Answers.**

SECOND SERIES.

Question 1.—Has anything interfered with your preparation for this examination during the time since the first series of questions were asked?

Answer.—There is no reason why sufficient knowledge to answer this second set of questions should not have been gotten during the year.

Q. 2.—Have any new signals or any changes in the old ones been introduced during the year?

A.—It is essential that a man keep posted on the signals of his road so that this question can be properly answered.

Q. 3.—Have you made any improvement in the way you fire your engine, and are you obtaining better results in making steam economically and in firing with less black smoke than a year ago?

A.—The experience of the past year should have been such that a man should be able to fire intelligently, thus getting all possible benefit from the burning of his fuel. He should be doing his work easier, burning less coal and making less black smoke than a year ago. A man does not stand still. He either progresses or goes backward, and in a year considerable progress should have been made.

Q. 4.—Give a general description of a locomotive boiler.

A.—A locomotive boiler consists of five principal parts: First, the firebox; second, the shell; third, the flue sheets and flues; fourth, the front end; and, fifth, the grates and shaking apparatus, and as an auxiliary to this, the ashpan. The firebox sheets are surrounded by water legs, through which the water circulates to keep the firebox sheets from burning out. At the front end of the firebox is the flue sheet; at the back of the firebox, the back sheet, which contains the fire-door opening; at the bottom the grates, and at the top the crown sheet. The shell of the boiler, of which the legs are a part, surrounds the firebox everywhere, except at the bottom, and this outer shell at the front of the firebox extends to the front end in the form of a barrel or a tube, in which are contained the flues. At the end of this barrel of the boiler is the front flue sheet, which also forms the front end of the flues. The smokebox connects to the boiler shell at this point and extends sufficiently beyond the front flue sheet to contain the steam pipes and draft appliances.

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*By member.

Q. 5.—What difference is there between the wide firebox and the narrow firebox, and what are the advantages of the wide firebox type of boiler?

A.—With the narrow firebox boiler the total width is such that the boiler can be set between the frames of the engine, whereas with the wide firebox the boiler is set not only over the frames, but in many cases projects over the wheels as well. The difference in the two types is that the size of the firebox is increased very greatly in the wide firebox boiler, the flues and barrel of the boiler being practically the same in both cases. The advantages claimed for the wide firebox are increased grate area and increased direct heating surface, the increased heating surface allowing the heat of the fire to be better utilized, the increased grate area allowing a large nozzle to be used, reducing the amount of back pressure in the cylinders, making a lighter draft on the fire and allowing a slower rate of combustion of the coal in the firebox, all three of which should produce considerable economy in the use of the fuel.

Q. 6.—What is a wagon-top boiler?

A.—A wagon-top boiler is a boiler which has an outer shell above the firebox of larger diameter than the barrel of the boiler. Sometimes this enlarged section is extended beyond the firebox and the dome placed on the enlarged section, in which case the boiler is known as an extended wagon-top boiler.

Q. 7.—Describe the different parts of a locomotive firebox.

A.—The locomotive firebox consists of a crown sheet, a flue sheet and a back sheet, in which is contained the firedoor and side sheets, which end at the bottom of the mudring. The side sheets are supported by staybolts, which extend through to the outer shell, and the space between the inner and outer shell is known as the water leg of the boiler. The crown sheet is supported by crown bars or radial stays, which are fastened to the outer shell of the boiler, and the crown sheet is further braced by stayrods, which are fastened to the shell of the boiler and also to the back boiler head. The back sheet and the front sheet, below the flues, known as the throat sheet, are also supported by staybolts to the outer shell. The bottom of the firebox is open, and in it are fitted the grates on which the fire is carried.

Q. 8.—Why is it necessary to place two firedoors in some of the wide fireboxes?

A.—It has been found necessary to place two doors in some of the wide fireboxes in order to allow the fireman to place the coal in the back corners of these wide fireboxes, and also to allow him to fire the engine with less exertion by doing away with the necessity of throwing the coal at such a great angle as would be required with only one firedoor.

Q. 9.—What strains is the firebox of a locomotive subjected to?

A.—A locomotive firebox is subject to the strain of the steam pressure, the strain of the weight of the water in the boiler, and to the strains caused by unequal expansion and contraction of the metals of which it is composed.

Q. 10.—How are the side and end sheets of a firebox supported?

A.—By staybolts, which extend from the firebox sheets to the outer shell of the boiler.

Q. 11.—Why is a small hole drilled in the outer end of some of the staybolts?

A.—A staybolt which has a hole drilled in its outer end is known as a hollow staybolt, the object of the hole being to provide a means of determining when the staybolts become broken. As these bolts usually break near the outer shell, the steam escaping through this small hole indicates when these bolts become broken.

Q. 12.—How are the crown sheets of a firebox supported?

A.—There are two methods of supporting the crown sheets in general use. One is known as the crown bar method and the other the radial stay method. In the crown bar method, heavy iron bars are riveted together with sufficient space between for the crown bolts to pass through them. They are placed so that the curved ends of these bars rest on each side of the crown sheet, near its edge. The crown bolts passing between these bars extend through the crown sheet and are bolted tight, and the sets of the crown bars are placed close enough to form a solid brace for the crown sheet. The crown bars, in turn, are supported by sling stays, which extend from the crown bars to the outer shell of the boiler, and are there fastened securely. In the radial stay method, staybolts are passed through the outer shell and on through the crown sheet itself, the position being such as to be as near radial to the curves of the two sheets as possible. These radial stays are placed close enough so that sufficient strength is provided to withstand the pressure the boiler is expected to carry.

Q. 13.—What disadvantages has the crown bar method?

A.—The crown bar method has the disadvantage of excessive weignt and cost. It also prevents to a certain extent the free circulation of the water across the top of the crown sheet, and also due to this cause allows large quantities of scale to accumulate around the crown bolts and the ends of the bars.

Q. 14.—What advantages has the radial stay method?

A.—The radial stay method is cheaper and reduces to a considerable extent the dead weight of the boiler. They are easier to keep in repair and allow a better circulation of the water, and the crown sheet can be kept cleaner with this method of staying than with the crown bar method.

Q. 15.—How are the fireboxes secured to the outer shell at the bottom?

A.—By a mudring, which is a heavy piece of iron occupying the full width between the inner and outer plates. The bottom of the firebox and the bottom of the outer shell are securely riveted to this mudring, which really forms the bottom of the water space of the boiler.

Q. 16.—What is the ashpan and what is it used for?

A.—The ashpan is a receptacle placed below the bottom of the firebox, and usually fastened to the mudring, that provides a means of catching the ashes and live coals that drop through the grates and of protecting the grates from snow in the winter time. It is provided with a movable door at each end, which can be regulated to allow the proper admission of air to the fire, and also to provide for the removal of the ashes, etc., which accumulate in the pan. In some cases there is an opening between the mudring and the ashpan. This opening is covered by a netting, which allows an additional air supply to come directly to the grates.

Q. 17.—What is the object of the steam dome with which boilers are usually provided?

A.—The steam usually contains a certain amount of moisture as it rises from the water, and consequently a steam dome is provided, which forms a small storage place for the steam to accumulate in before being used, allowing sufficient time in many instances for a large part of the water to become separated from the steam, thus providing dryer steam for use in the cylinders. The throttle valve is always placed in the dome, when there is a dome provided on the boiler.

Q. 18.—In what condition should the boiler be to produce good results?

A.—The boiler should be clean and free from leakage, and must not contain any oil or vegetable matter which would be liable to cause foaming.

Q. 19.—What is meant by circulation in the boiler?

A.—The water in the boiler is always in motion, or, in other words, is always circulating, the explanation being that the hotter the water becomes the less it weighs. The cold water when entering a boiler would, consequently, go direct to the bottom. As its temperature increases it would rise until at its hottest point it would be found at the top of the boiler. The admission of cold water to a boiler and its rise in temperature, as it is being turned into steam, therefore accounts for and explains the circulation of the water which always takes place.

Q. 20.—What would be the effect if one of the legs of the boiler should become filled up with mud?

A.—Should one of the legs of the boiler become filled up with mud the water could not circulate through it. As long as there is water on one side of any of the firebox sheets this water will absorb the heat of the fire so rapidly that there will be no danger of burning the firebox sheets, but in case the water could not get to the firebox sheets on account of the mud in the boiler at that point, there is great danger of the sheet becoming very hot and consequently mud burned.

Q. 21.—What would be the effect on a firebox sheet of overheating it?

A.—If a firebox sheet becomes overheated there is great danger of its becoming cracked during the time it is cooling off, and even if it does not become cracked the strength of the sheet is materially reduced, due to the metal having been heated and possibly burned, and there is grave danger of the sheet being weakened to such an extent that it will give away under pressure.

Q. 22.—Why is the check on the boiler usually placed near the front end?

A.—The reason why the boiler check is usually placed as near the front end as possible is on account of the fact that it is desirable to have the cold feed water enter the boiler at the point where the temperature of the boiler is the least, rather than close to the firebox sheets, where the temperature is greatest. For this reason the boiler checks are usually placed well ahead on the boiler, thus doing away with the danger of unequal strains on the boiler, due to the cold water entering close to the hot sheets, as well as promoting good circulation in the boiler by not distributing the natural circulating current that is formed by the heat.

Q. 23.—On what part of the locomotive boiler is the greatest pressure exerted?

A.—The actual pressure of steam and water is the same in every direction, so that, as far as pressure is concerned, it is the same at all points. However, the weight of the water in addition to the pressure causes the greatest pressure to be exerted near the mudring.

Q. 24.—How long should the smokebox of a locomotive be?

A.—Long enough to provide sufficient room for the steam pipes, the exhaust pipes and the different draft appliances.

Q. 25.—Why is steam exhausted through the front end and out the stack?

A.—The exhaust steam is carried through the nozzle in the front end and out the stack in order to produce a vacuum in the front end, which in turn will allow the atmospheric pressure to force its way through the ashpan and grates and through the fire and the flues to supply this vacuum, promoting the combustion of the fire and providing a means of carrying the gases and products of combustion from the firebox through the flues into the front end and out the stack.

Q. 26.—What effect has this action on the fire?

A.—The atmospheric pressure forces itself up through the ashpan, grates and fire, in order to supply this vacuum in the front end, thus producing an artificial draft on the fire and providing the oxygen necessary for the proper combustion of the fuel.

Q. 27.—How can black smoke be prevented from trailing down over the train when steam is shut off from the engine?

A.—If the gases are burned out of the fire before the throttle is closed, or if they are partially burned out, and the blower opened a small amount, it will do away with the smoke and thus prevent its trailing back over the train.

Q. 28.—What adjustable parts are contained in the front end by which the draft on the fire is regulated?

A.—The parts in the front end which can be changed to regulate the draft on the fire are the exhaust nozzle tip, the petticoat pipe and sleeve and the deflector plate, with its adjustable extension.

Q. 29.—What adjustment can be made with these three appliances and what is the effect of such an adjustment on the fire?

A.—The size of the exhaust nozzle tip can be increased or reduced. Speaking generally, the larger the nozzle the less the amount of vacuum produced in the smokebox, and, consequently, less draft is produced on the fire. If the size of the nozzle is reduced, it increases the vacuum in the front end and increases the draft on the fire. Any change in the size of the nozzle, however, causes a corresponding change in the back pressure of the cylinder, which is an important point to be considered in regulating the size of the nozzle. Sometimes bridges are placed across the nozzle tip to spread the exhaust and make it fill the stack nearer the base. There are many arguments for and against the use of a bridge, but in general, if the engine is properly designed it should have plenty of draft with an open nozzle of reasonable size. The use of a bridge usually overcomes some defect in the front end arrangement. The petticoat pipe and sleeve is simply an uptake pipe, standing between the top of the nozzle and the base of the stack. By raising and lowering this petticoat and sleeve a change can be produced in the amount of the draft, and to a certain extent on the even burning of the fire. Where the deflector plate is high, if the distance between the tip of the nozzle and the bottom of the petticoat is large compared to the opening between the top of the petticoat and the bottom of the stack, the draft will be greater through the bottom flues and the fire will burn out faster at the front end of the firebox. If the reverse is the case, the fire will burn faster at the back end of the firebox, near the door. The adjustment of the deflector plate is the usual means of drafting the engine so that the fire will burn evenly all over the grates. If the deflector is low, it will cause a stronger draft through the lower flues than through the upper flues, and the fire will burn faster at the flue sheet than at the door, whereas if the deflector is high the reverse is the case. It should be the object in adjusting the draft appliances to produce a sufficient draft for the proper burning of the fire by the aid of the exhaust nozzle and the petticoat pipe. This should be done without creating unnecessary back pressure in the cylinder, and then the even burning of the fire should be regulated by the adjustment of the deflector plate.

Q. 30.—What should you judge to be the trouble if the exhaust steam and smoke issued from one side of the stack?

A.—The exhaust steam and smoke issuing from one side of the stack indicates that the exhaust stand is out of line with the stack, or the stack is out of line with the exhaust stand, or the petticoat pipe is out of line with the exhaust stand and stack. This should be remedied immediately, as it seriously interferes with the proper action of the exhaust.

Q. 31.—What would be the effect of having a large number of the flues stopped up?

A.—The effect of stopped up flues is to interfere with the even burning of the fire. It also increases the speed of the gases through the flues, which, of course, does not allow the heat to be given up properly to the water for making steam, and it also reduces the heating surface of the boiler materially, as a large proportion of the heating surface is in the flues.

Q. 32.—What trouble will be caused if the steam-pipe joints are leaking in the smoke-box?

A.—Leaky steam-pipe joints in the smokebox allow the steam which leaks by them to expand into the smokebox and to destroy a large proportion of the vacuum produced therein by the draft. To understand this it must be remembered that steam is an elastic body, and if allowed to escape from a high pressure to a low pressure it expands and occupies many times the space it was previously contained in. This steam expanding will supply the vacuum formed in the front end just the same as the atmospheric pressure would, the result being that every bit of steam expanding into the smokebox from these leaks means just so much less draft on the fire, with the result that the engine will not steam.

Q. 33.—Explain what causes the pull on the firedoor.

A.—The vacuum produced in the front end will always be supplied as readily as possible, the usual means being by atmospheric pressure coming through the ashpan, grates, fire and flues, as already explained. There will always be a pull on the firedoor, however, because the vacuum exists in the firebox, as well as in the flues and the front end, and, as the vacuum represents a pressure less in amount than the atmospheric pressure, there will be a difference of pressure holding the firedoor shut, just the same as there is a difference of pressure which causes the movement of the triple piston of the airbrake when a reduction of train-pipe pressure is made.

Q. 34.—In your opinion, what is the best method of firing a locomotive?

A.—The problem of firing a locomotive is different for every engine, and a man must rely on his practical experience entirely in judging as to the thickness of the fire to be carried, the method of firing, etc. Speaking generally, however, the best rule is to carry a light fire, a level fire, and a bright fire; to fire light and often, having all the coal broken up in small pieces, spreading it well, covering the bright spots, and closing the door between each scoopful fired, and only supplying the fuel as is necessary to produce sufficient steam for the way the engine is being worked, being careful to burn down the fire in approaching stations and other points where necessary to shut off, and to open the blower if necessary when shut off, to avoid making black smoke, bearing in mind constantly that careful attention to the work in hand will produce economical results, with less labor on the fireman's part and with a reduction in the amount of black smoke made.

Q. 35.—If, when the firebox door is opened, the fire appears similar to what is known as a red fire, what would you judge to be the cause?

A.—If on opening the firebox door the fire has a dull red color, it indicates that proper combustion is not taking place, the most probable cause being that the fire is too heavy for the way the engine is drafted, or else that the fire is clinkered or dirty; in other words, there is not a sufficient supply of air going through the fire for the proper combustion of the fuel. The remedy, of course, is to get some air through the fire, so that the proper combustion can take place.

Q. 36.—What conditions will allow of holes being torn in the fire?

A.—If holes are torn in the fire, it indicates either that the engine is improperly drafted, so that there is not an even pull on the fire, or else the firing has been done carelessly, so that banks have been formed in some places and light spots left in others, or else the fire is dirty in places where banks have formed, increasing the draft to such an extent where the fire is clean that holes are burned in it.

Q. 37.—Is it a waste of fuel to open the firedoor to prevent the pops from blowing? How should the necessity for this be prevented?

A.—It is simply a waste of fuel to open the firedoor to prevent the engine from popping. The thing to do is to fire carefully, so that, while the pressure remains close to the popping point, it will, nevertheless, be unnecessary to cool off the engine every few minutes to prevent its popping.

Q. 38.—What is the cause of an engine drumming? How can it be avoided, and why should it be avoided?

A.—The drumming noise made occasionally by an engine is usually explained by the fact that the gases of the coal and the air when mixed in proper proportions and ignited will explode. The drumming seems to be a succession of these explosions taking place in the firebox when the fire happens to be in just the proper condition to produce this mixture of air and gas. It usually occurs with a light, bright fire, when the engine is standing or running shut off. It can be stopped usually by dropping the dampers, opening or closing the firedoor, or adding fresh fuel to the fire. In other words, by changing the firebox condition so that the explosive mixture of the air and gas is done away with.

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Progressive Questions and Answers on the Air Brake.

A revised edition of Progressive Questions and Answers on the Air Brake, both Westinghouse and New York systems, for beginners and advanced students, has just been issued by the Air-Brake Association.

Westinghouse System.—The book contains a thorough description of all the Westinghouse apparatus, construction and operation, disorders, their location and correction. This department contains more than 800 questions and answers, and nearly 100 first-class illustrations, besides many general questions and answers.

New York System.—All parts of the New York apparatus are thoroughly explained, including disorders, their location and remedies. Nearly 600 questions and answers are given in this department, supplemented by 80 splendid illustrations, and it is one of the best, if not the best treatise on the New York air brake ever published.

In the introduction the publishers say:

"The value of the original book of Questions and Answers on the Air Brake, as compiled by the Air-Brake Association in 1896, is perhaps best estimated by the unusually large sale of sixty thousand copies up to the present time. This value is further forcibly expressed by the insistent demands of air-brake men for a revision of the original book, although there are many other air-brake books in this field which, to some persons, may appear overcrowded. Regardless of this fact, there seems to be a special field and demand for the Air-Brake Association's Book of Questions and Answers. It is to meet these demands, and also those of new conditions in modern railroad air-brake practice, that this revision has been made. Both the Westinghouse and New York systems have been exhaustively treated by specialists in these two companies, thus putting between the covers of one book authoritative and up-to-date information on the two brakes. That portion of the work pertaining to inspection, operation, repairs and maintenance has been performed by actual service men, expressly called in for the purpose from the firing line of daily experience. In this way there has been brought together the strongest revising corps obtainable to produce an air-brake book equally valuable to the beginner and to the advanced student—the former, if he applies himself, being fitted to pass any air-brake examination imposed, and the latter to be entertained and kept up-to-date in air construction and practice. As an addition to the library of the air-brake student, this book will be found indispensable."

This book should be in the technical library of every locomotive engineer and fireman. It is furnished in both leather and paper covers, and copies may be purchased from Mr. F. M. Nellis, Secretary, Air-Brake Association, 136 Liberty street, New York, N. Y.

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The Mechanical Stoker.

Railroad men and those interested in railroad work have for some time been asking themselves and each other as to the probable upper limit of size in locomotive construction. Matters have gone forward with such leaps and bounds during the past twenty-five years that one has been obliged to be on the alert in order to keep in touch with the advancement that has been made. Locomotives with from three to three and a half times the heating surface of the ordinary practice of the early eighties are now so common as to attract hardly a passing notice, and no one feels sure that the end has come.

In all of this growth we have heard much of the strength of material, the efficiency of heating surface, the proper loading of bridges and track, and the economy of high steam pressures and heavy loads, but hardly a word about the man.

Unfortunately he remains the same as in the days of small engines, while the only consideration that he has received is in the limitation of the length of the firebox. Practical working with extra long fireboxes showed them to be impossible when considered from the physical standpoint of the man; firemen were found to be incapable of throwing coal to the front of such a box with any certainty of placing it where it was needed. So there has been a limit placed upon the length of this part, though in other respects the modern locomotive seems to have been developed regardless of the man who is to feed its furnace.

The fatigue of those who fire large engines over a long division and the complaints arising from this overexertion have been so pronounced that the subject of placing three men on these engines has not only been seriously considered by railroad men, but has been aggressively demanded by the labor organizations. The matter has already been brought to the attention of the legislatures of Indiana and Ohio, with the view of making it a legal requirement that two firemen be used on such machines. The railroads object to this for the reasons that the second man will increase the expense and probably decrease the efficiency of the whole crew. The argument of the men is, however, a potent one, that the work demanded is more than the average fireman can perform.

That there is much of truth in this there can be no doubt. Just what the railroad companies lose by this overexertion of the men no one knows, though it would be interesting to determine the difference in the total efficiency of the locomotive between the first ten and the last ten miles of a hundred and fifty-mile run, attributable to the loss of efficiency or fatigue of the man. At any rate, the railroads are being pressed to put a larger crew on the big engines. Their saving defense will be that more than two men are not needed, and to prove this latter point the assistance of some form of mechanical stoker will have to be invoked. For many years the air has been full of talk and speculation about the availability of such a device, and one or two forms have been tried, with more or less success, in an experimental way, but no road as yet has either adopted one or made an application on a large scale.

The prospects are, however, that the preliminary work along these lines is emerging from the tentative and experimental and entering upon the practical stage of development, when the mechanical stoker may be expected to work with all the reliability of the injector, or the air brake, or any of the other attachments that in their day have passed through the disheartening period of experimental work. In what the stoker is now doing, it has been demonstrated that it is capable of distributing the coal evenly over the surface of a large firebox; of maintaining steam pressure under a wide range of requirements, and of picking up a pressure that has been lost through inattention on the part of the fireman. That it is successful on these points there is ample proof. It might win out on all of these counts, however, and still fall far short of being a commercial or mechanical success, if it added to the labors of the fireman, or wasted coal. As to the latter point, there are no data available. The impression prevails among those who are using stokers, that the coal consumption remains about the same as with average hand firing. Smoke is freely and continuously discharged from the stack, and there is evidently room for improvement here. But it should not be expected that a device which has not yet reached the point of official adoption should excel all previous attempts to do the work for which it is intended at every point. The problem attacked, up to the present, has been to put coal into the firebox of a large locomotive while it is at work, in such quantities and in such a way that steam will be continuously maintained at the proper pressure to enable the engine to do efficient and satisfactory work. With this accomplished, any slight difference in coal consumption, even though it might be in favor of hand firing, should not be allowed to militate for a moment against the use of the stoker. The matter of coal saving and smoke prevention can be taken up later, and will probably have to be worked out in detail to meet the requirements of each individual case, according to the quality of coal that is used. It is not at all probable that the same arrangements would answer equally well for the high grade

Pocahontas and the inferior coals of Illinois.

As to the first point, the labor of manipulation, the question can be easily settled. One strong point is that the men like the stoker, and this would certainly not be the case if it added to their labors. If this fails to convince, a ride on an engine and a consideration of the fact that the fireman has no door to open; that he can stand well back from the boiler head in doing his work; that he is not exposed to the direct radiation of the fire at any time except at the rare intervals of raking the surface; that he has merely to shovel coal from the floor of the tender to a hopper with no care or attention as to where the coal falls, so long as it does not drop outside the edge of the stoker, and that this can be done *en bloc*, with intervals of rest between—all of these things will convince the observer that the work is easier. And it is easier to such an extent that a man can now fire one of these engines with far less exertion than he could formerly handle one of much smaller dimensions. It is possible, too, that even this work will be minimized by the addition of a conveyor that will take the coal from the tender and put it in the hopper of the stoker, though this is still a promise of the future.

In the minds of some, the introduction of the mechanical stoker means the lowering of the requisite skill of the fireman and his replacement by the common laborer. This is far from being warranted by the facts. Like every other improvement in applied mechanics, an increased complexity demands an increased skill on the part of the operator. This holds especially true in the case in hand. The fireman can not blindly dump unlimited amounts of coal into a hopper and expect an inanimate machine to so regulate its discharge as to do the proper thing at the proper time under all the varying demands for steam that may be made by the engines. He must, more than ever, be conversant with the laws of combustion and the methods by which the best results are obtained. He must use his brains in the interim between the fillings of the hopper, and he will find that his time is fully occupied. The mechanical stoker will not make the position of fireman on a heavy locomotive a sinecure, it will simply relieve his muscles to demand more of his head.

With this promise of relief at hand there is no probability that the shadow of the big locomotive will ever be less or its economy impaired by a failure to work it to its maximum efficiency. That all these happy results will be accomplished in the twinkling of an eye is not to be expected, but there is a strong tangible evidence that they are within the possibilities and probabilities of the near future, and that we may expect to see the mechanical stoker as firmly established for certain classes of locomotive work as it is in stationary plants of great magnitude.—The Railroad Gazette.

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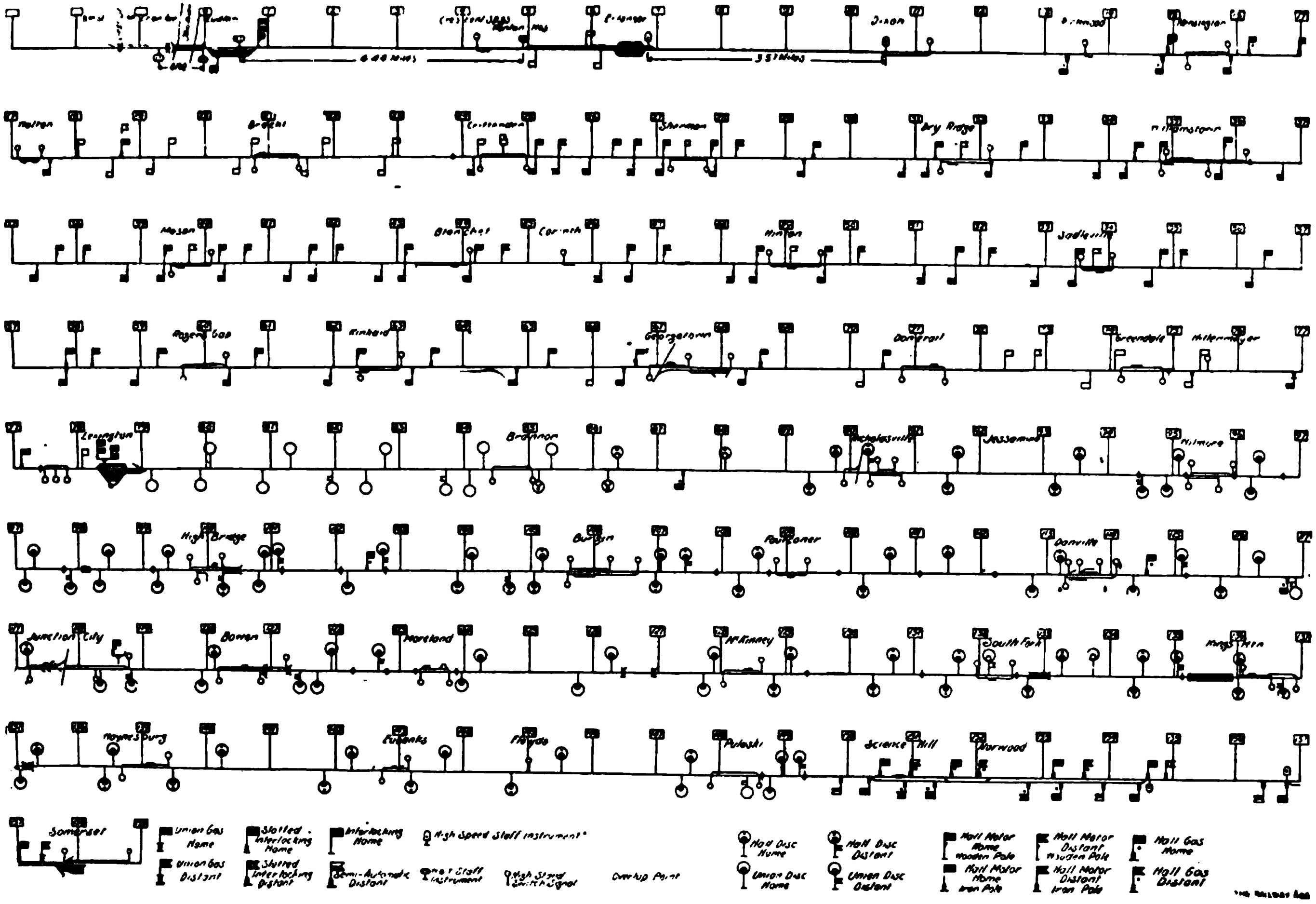
Maintenance and Signaling Notes on the Queen and Crescent Route.

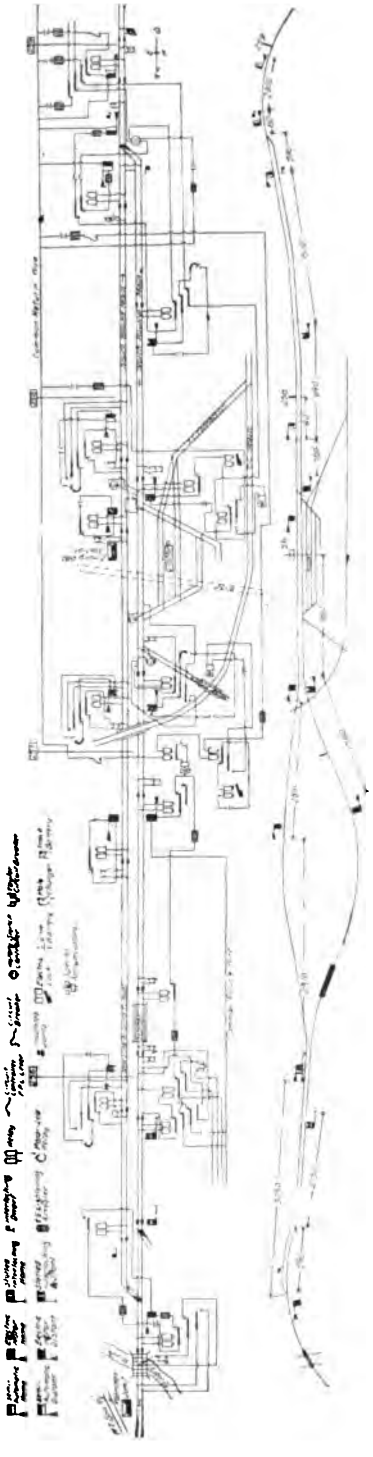
The importance of an efficient signal system on a busy line of railroad, or where engineering difficuties are encountered in the way of grades, tunnels, etc., is fully brought out in the following, which, together with the illustrations, is reproduced from the Railway Age:

The composition of this line is peculiar, since it involves three distinct railway companies, namely, the Cincinnati Southern, the Alabama Great Southern and the New Orleans and Northeastern. Of these, the last is owned and operated entirely independently from Meridian to New Orleans, while the two former are operated by the Cincinnati, New Orleans and Texas Pacific Railway, which is merely an organization and leases the Cincinnati Southern, built and owned by the city of Cincinnati, while the Alabama Great Southern is operated under a contract with the owners.

The Cincinnati Southern is the busiest portion of the line and extends from the city of that name to Chattanooga, Tenn., a distance of 336 miles. With so little double track as to be a negligible quantity in the scheme of operation; with frequent curves of 6 degrees; with gradients reaching in many places 70 feet to the mile, nevertheless this line earned at the rate of more than $20,000 per mile in the year ending on June 30, 1904. When it is stated that the speed of the trains is very high; that owing to the lightness of the bridges the important passenger trains are double headers, and that, nevertheless, the operating expenses average but about 73 per cent. of the gross earnings, a question is aroused as to how this is possible. The answer is simple, and should be known by every railway operating officer in the United States—Signals. Up to the year 1889 there were long periods when collisions occurred every day, and in one month of 30 days there is a record of 31 collisions. Yet to-day they are almost unheard of, although the traffic amounts to 30 trains each way every twenty-four hours (and in actual operation this amount is often exceeded); although trains run with re-



Signaling on the Queen and Crescent—Signals on the Cincinnati Division



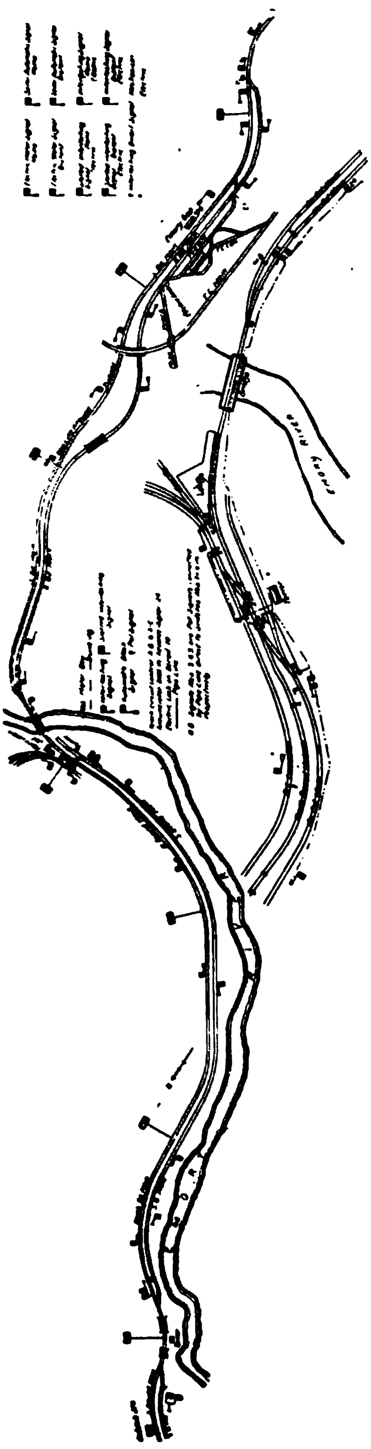
Signaling on the Queen and Crescent—Arrangement of Signal Circuits near Harriman Junction

markable regularity, wrecks are scarcely known and collisions have practically disappeared as a class of accident. The reason for this still is—Signals.

Physical Characteristics.—The most difficult part of the line is the Chattanooga division, from Somerset southward to Chattanooga, a distance of 177 miles, which embraces nearly 40 per cent. of curvature and 4½ per cent. of bridges and tunnels. On this 177 miles nearly 28 miles of passing track exist, and by this means only is it possible to handle the traffic. From an engineering standpoint, the line is magnificent, and except in very few cases the investigations which have been made to improve it—lessen the grades or reduce the curvature—have shown that few alterations, even at very great cost, would ameliorate the conditions. As one officer expressed it, "We always ran out, either against a mountain with a two-mile tunnel, or a 500-foot precipice and a million dollar bridge."

To make such speed as is the rule on passenger trains, the attention devoted to maintenance of way must be very great, and the manner in which a train moving at the rate of 60 miles an hour enters and leaves a 6-degree curve is a sufficient demonstration of the effectiveness of the methods. Two of these are significant: All curves are spiraled according to the Searles formula, and the track is laid with Weber joints. Stone ballast prevails on the Cincinnati division, while on the Chattanooga division and on the Alabama Great Southern furnace slag derived from Birmingham is universal. It would be difficult to discover a more perfect riding track than is to be found on the line between Chattanooga and Birmingham, and this must not be taken as detracting from the quality of track north of Chattanooga, since that is of an unusually high character; but traffic there is very great and south of Chattanooga the traffic is comparatively light. The surprise exists in the fact that, with so light a traffic, the line and surface, instead of being pretty good, could be improved upon scarcely, if at all.

Although, as a whole, the Chattanooga division from Somerset southward is the most difficult, there is a rather broken country south of Lexington, where the line winds in and out through the mountains and crosses several great bridges, among which is that over the Kentucky River, which for many years ranked as the highest in the world. North of Lexington the line is through a rolling country, much of it contained in the beautiful blue grass region. In the vicinity of Cincinnati and for some distance southward the surface geologically is almost wholly argillaceous, which, owing to its instability, is the source of much trouble. On fills of any magnitude it has been found necessary to drive a line of piles about three-fourths of the distance down the bank, and although this seems to be effective in most cases, instances are observ-



Signaling on the Queen and Crescent—Arrangement of Tracks and Signals near Harriman Junction

able where even the piles show signs of failure. It is because of this unstable material that so many long and high bridges exist, which otherwise would have been filled up and obliterated many years ago. This, again, accounts for the use of double headers as the only effective means of securing a heavy tractive effort, since the bridges are nearly 30 years old, and although of high standard for the period of their construction are now too light for the most modern types of locomotives.

Many interesting practices are to be found along the Queen and Crescent route, and among these is the clear and unmistakeable way in which the right of way is delimited. Large cedar fence posts, painted white, mark every change in direction. This is attributed to the ex-president of the line, Mr. S. M. Felton, Jr., and it is said, also, that where the right of way was uncertain through the southern portion, he fixed the width arbitrarily at 100 feet and the center line of the track as the center line of the right of way, without regard to anything but existing conditions. There is some humor in this, but it is not so arbitrary as first appears, since where this practice was followed the land is almost uninhabitable for anything but "razor backs" and worthless for any purpose other than a right of way.

Signaling.—No attempt will be made to describe the signaling methods in detail, and it is therefore sufficient to say that the line is continuously controlled by block signals from the southern side of the Ohio River to Chattanooga. Interspersed are various interlocking plants, among which are several electric installations erected by the General Railway Signal Company. The block signals constitute literally and figuratively a history of the automatic form, beginning with the ancient but honorable clockwork, passing through the enclosed disc type, and finally reaching the purely electric and the electro-gas semaphores as the present standards. It is interesting and comforting to those who were enthusiastic for the clockwork signal some twenty years ago, that no signal of whatever character has a more splendid record than this obsolete form. It is working under the same inspection and conditions as are the later forms, and, at small cost for maintenance compared with even the enclosed disc, is performing satisfactory service after nearly twenty years of faithful work.

Because of the difficult line and the immense expense involved in construction, there are several short pieces of single track interposed between other short pieces of double track, and here the staff system is used. This was very fully described in The Railway Age of March 18, 1904, and no further reference is necessary here. A peculiar arrangement exists in the neighborhood of Harriman Junction, where the double track merges into single track through tunnels 25 and 26, and again over the Emory River bridge. At all four of the resulting junction points, 24-foot switches and No. 18 frogs aré used, and the traffic over the single track is controlled by automatic block signals, absolutely irrespective of train rights and entirely without train orders; in other words, first come, first served. A singular condition obtains here in the fact that on one part of the double track trains are run righthanded, while on the other portion they are run lefthanded. This is due to the heavy grade from Emory River to Emory Gap, where the southbound double track swings outside of tunnel No. 27, which is not only very difficult to maintain and on a sharp curve, but is the heaviest part of the grade. Since the tonnage is principally southbound, trains are run around the tunnel, while northbound trains are able to drift through the tunnel without danger of stalling. An inspection of the types and locations of signals at and near Harriman Junction, as shown in one of the illustrations accompanying this article, will make clear the ingenious arrangements which obtain at this point.

On the Cincinnati division the arrangement of signals approximates as nearly as possible to the ideal one desired by the operating department, and its efficiency falls very little below the theoretical perfection which follows the physical peculiarities of the line. On the Chattanooga division, however, this state of affairs is not yet approached, although the plans are perfected and every change made in the location of a signal is toward the final end. The reason for the inferiority of the arrangement on the Chattanooga division arises from the fact that the first considerable installations of automatic block signals were for the protection of trains at isolated points, such as tunnels and sharp curves at the bottom of heavy gradients. Gradually these gaps have been filled in, with results which are less perfect than would have been the case had the line been studied as a whole from the beginning.

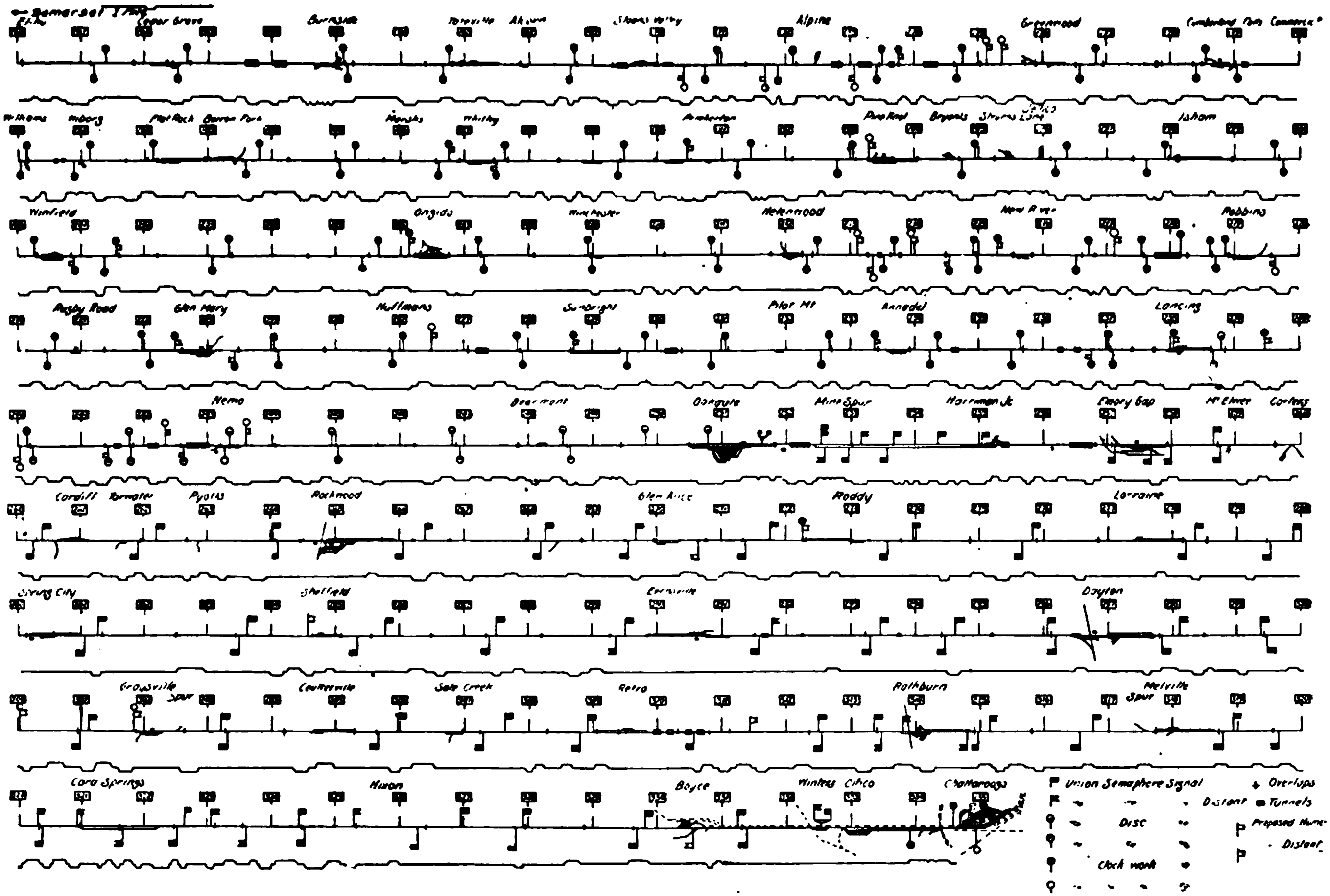
Reverting again to the southernmost end of the double track south of Emory Gap. Here the automatic signals are used both for blocking trains and for showing the position of the switches. All of these signals are controlled by track circuits and by circuit controllers, which latter are attached to a facing point lock lever, so that signals can not resume a proceed position until switch is set and locked for the desired route, and also until the track on the block in advance is clear. This reduces the number of interlocking levers at this place, and is an illustration of how necessity becomes the mother of invention. There was here a surplus of material of various kinds which had been taken out of service at another place, and by relocating some of the automatic signals the use of the small existing interlocking machine was possible without the purchase of any new material.

No distant switch signals are used between Cincinnati and Chattanooga, because the block signaling arrangements are complete and all block signals are electrically connected with every switch which concerns them. On difficult or dangerous parts of the line, where watchmen are maintained, plugs governing the signal circuits are placed in each watchman's shanty, for use in case the track should be obstructed by falling rock or a slide. This has proved of great value in many instances. The signals themselves are of the motor type styles "B" and "C" of the Union Switch and Signal Company, while the power is derived from batteries furnished by the Electric Storage Battery Company of Philadelphia. All circuits are polarized, with no line wires, and the maintenance of the system is therefore reduced to its simplest form.

South of Chattanooga, on the Alabama Great Southern, there are no automatic signals, but here all switches are protected by distant signals, which are interlocked with the switchstands. A very clear form of target is used with a rather high target rod and targets, with the blades placed in planes which are at right angles to each other.

A letter signed "A" appeared in The Railway Age on March 3d, and while asking some questions concerning the operations of these signals, animadverted rather strongly upon some mistaken premises. It is not possible here to correct all of the misconceptions or to answer all of the questions, but Mr. W. A. D. Short, superintendent signals of the Queen and Crescent Route, undoubtedly will be happy to relieve "A" of his remaining doubts. Certainly and without qualification, if "A" has a serious purpose and is not a purely academic inquirer, an inspection of the line under actual conditions of operation will clear many of his uncertainties and give him an entirelv new idea as to safe single track operations. Usually, the most difficult person to convert from an adherence to ancient train dispatching methods is the train dispatcher, whose whole education and experience have been gained under that system, but there are no more enthusiastic advocates of the methods adopted on the Cincinnati Southern than the train dispatchers themselves. A 31 order is given only to the superior train, and 19 orders are given merely for the guidance of trains, which are run often three minutes apart; two fast trains on one portion of the line, although scheduled ten minutes apart, are usually not much more than four minutes apart.

It is not an exaggeration to say that, for safety of method combined with simplicity of operation, the 336 miles from Cincinnati to Chattanooga is not equaled or even approached on any other railway in the United States and probably not in the world. It is an object lesson for those who wish to know, as well as for those who ought to know, what can and should be accomplished upon the railways of the United States toward securing the safety of their trains.



Signaling on the Queen and Crescent—Signals on the Chattanooga Division

Compound Locomotives and Their Steam Distribution.

An interesting and instructive little booklet bearing the above title has been issued by the Baldwin Locomotive Works, Philadelphia, Pa., from which the following, together with the illustrations, is reproduced. The information therein should prove valuable to our many members and readers who have to do with compound locomotives:

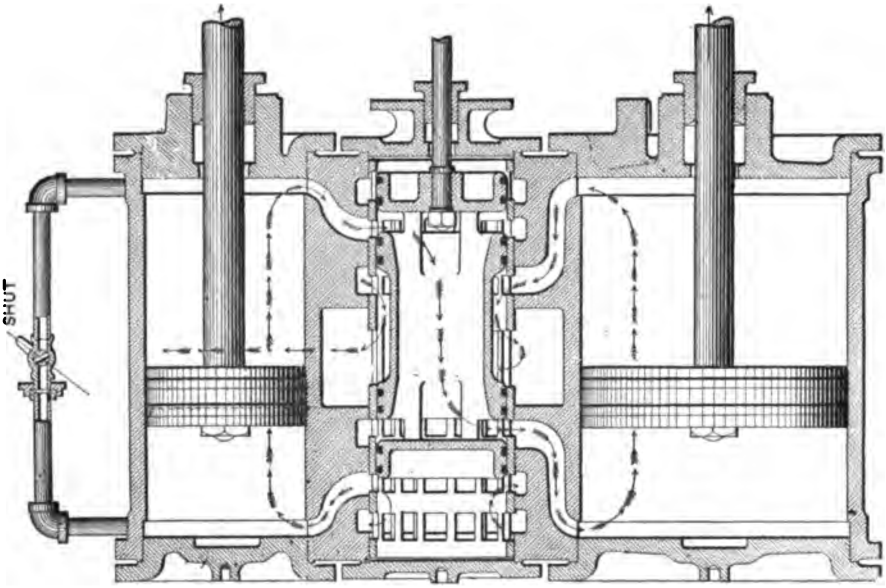


Diagram of Steam Distribution in Vauclain Four-Cylinder Compound

The Vauclain Four-Cylinder Compound.

That valuable economies of fuel and water can be effected by the use of compound instead of single expansion cylinders is a principle which is generally admitted.

Recognizing this principle, the Baldwin Locomotive Works have brought out four distinct types of compound locomotives, each of which combines special features of merit. In all of these types it has been the endeavor to simplify as much as possible the construction and operation, in order to insure economy in maintenance and repairs.

The original Vauclain 4-cylinder compound was constructed in 1889. It has nearly all the points of simplicity shown by a single expansion locomotive. On each side a high and low-pressure piston take hold of a single crosshead, and are controlled by a single balanced piston slide valve, so that the machinery is the same as the single expansion, except that four cylinders and pistons are used instead of two. Nearly 3,000 locomotives of this type have been built for use in the United States and foreign countries.

The distribution of steam in the 4-cylinder compound is shown by the diagram given herewith. The arrangement of the cylinders in relation to the valve is, for convenience of reference, somewhat distorted, the valve being shown in a vertical line between the two cylinders. The valve employed is of the piston type, working in a cylindrical chest located in the saddle casting, between the cylinders and the smokebox, and is as close to the cylinders as convenience will permit. It is surrounded by an independent bushing, with port openings machined to exact dimensions, so that the admission of steam will be uniform under all conditions. By the use of this bushing, repairs can be made from time to time, and changes effected in the port openings, without necessity of altering the cylinder castings. The bushing is forced into the cylinder casting by hydraulic pressure.

The function of the valve is to control the admission and exhaust of both cylinders. Live steam enters the chest at both ends of the valve and is admitted to one end of the high-pressure cylinder. The exhaust from the high-pressure cylinder passes through the central hollow portion of the valve and supplies the low-pressure cylinder, while at the same time the steam in the opposite end of the low-pressure cylinder is allowed to escape under the valve to the final exhaust in the stack.

In order to obtain the maximum starting power in any compound locomotive it is necessary to employ some means of admitting live steam to the low-pressure cylinder. The device for this purpose in the Vauclain 4-cylinder type is a by-pass valve, which is opened to allow the steam to pass from one end of the high-pressure cylinder to the other, and from thence to the low-pressure cylinder.

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Two-Cylinder Compound.

The essential features of this design, brought out in 1898, are the intercepting and reducing mechanisms. These, when in normal position, permit the locomotive to operate by single expansion and so continue until changed to compound. The locomotive is therefore readily started at any position of the crank.

In the diagrams, Figures 1 and 2, *A* is a double piston intercepting valve, located in the saddle casting of the high-pressure cylinder. In one direction the movement is controlled by a spiral spring, in the other by steam pressure. The function of the intercepting valve is to cause the exhaust steam from the high-pressure cylinder to be diverted, at the option of the engineer, either to the open air when working single expansion, or to the receiver when working compound. *C* is a reducing valve also placed in the saddle casting of the high-pressure cylinder, and like the intercepting valve is moved in one direction by a spiral spring and in the opposite direction by steam pressure. The function of this valve is, in its normal position, to admit live steam into the receiver at reduced pressure while the locomotive is working single expansion. When the locomotive is working compound, this valve automatically closes, as it is evident that there is no further need of live steam in the receiver. A further function of the reducing valve is to regulate the pressure in the receiver so that the total pressure on the pistons of the high and low-pressure cylinders may be equalized. The steam for controlling the operation of both intercepting and reducing valves is supplied through the pipes *D* from the operating valve in the cab.

When not permanently closed by pressure in the pipes *D*, the reducing valve *C* is operated automatically by the pressure in the receiver. To this end the port *E* is provided, communicating with the receiver and the space in front of the reducing valve; as the pressure rises the steam acts on the large end of the reducing valve, causing it to move backward and close the passage *H* through which steam enters the receiver, and thus prevent an excess pressure of steam in the low-pressure cylinder. Poppet valves *F*

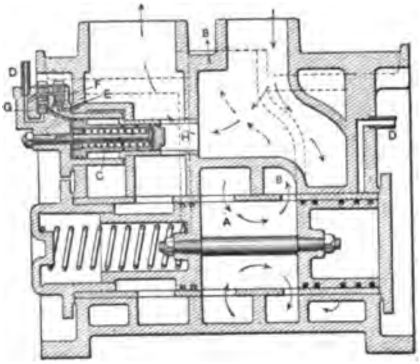


Fig. 1. Two-Cylinder Compound. Position of Valves when Working Single Expansion.

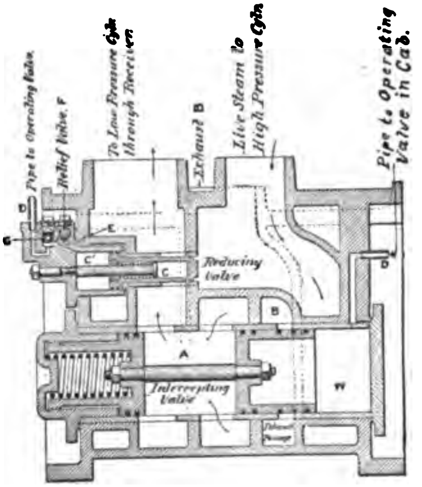

Pipe to Operating Valve.
Relief Valve. F
To Low Pressure Cyls through Receiver
Exhaust B
Live Steam to High Pressure Cyls
Pipe to Operating Valve in Cab.
D
G
E
C'
C
Reducing Valve
D
B
A
Intercepting Valve
W

Fig. 2. Two-Cylinder Compound. Position of Valves when Working Compound.

and *G* are placed in connection with the port *E*, one to prevent the escape of steam from the receiver to the pipe *D* when the locomotive is working single expansion, and the other to close the passage from pipe *D* to the receiver when working compound.

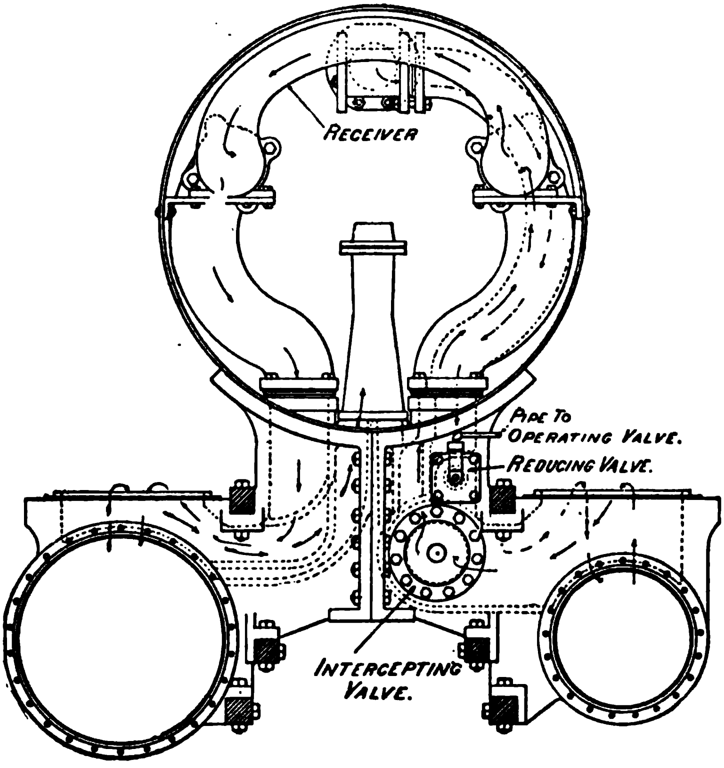


Fig. 3. Two-Cylinder Compound. Cross-Section.

Normally the lever of the operating valve in the cab is in the position marked "simple." In this position no steam is allowed to enter the pipes *D* and no pressure will be exerted on the intercepting and reducing valves in opposition to the springs, and they will assume the positions shown in Fig. 1. The ports of the intercepting valve *A* stands open to receive the exhaust steam from the high-pressure cylinder and deliver it through the exhaust passage *B* to the atmosphere. The reducing valve is open, admitting live steam through passage *H* to the receiver and from thence to the low-pressure cylinder. The receiver pressure is governed by the automatic action of the reducing valve as previously explained. In this way the locomotive can be used single expansion in making up and starting trains for switching and slow running.

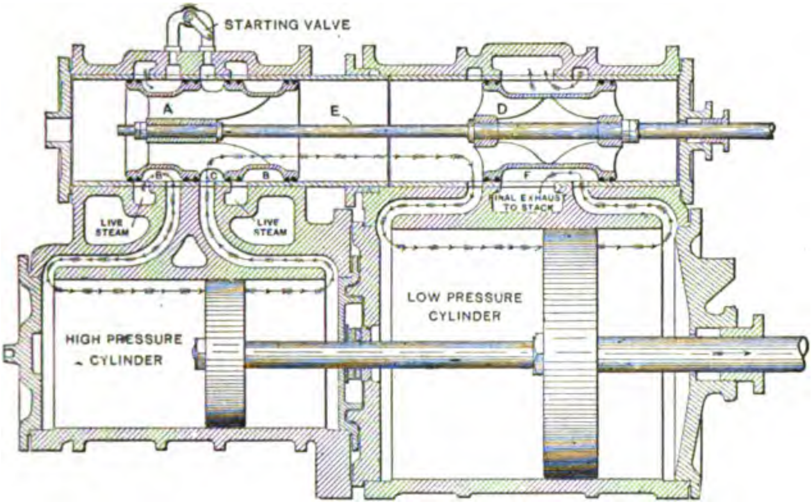
At the will of the engineer the operating valve in the cab is moved to the position marked "Compound." This admits steam to the pipes *D* and through them to the valve chambers *W* and *C'*, changing the intercepting and reducing valves instantly and noiselessly to the positions shown in Fig. 2. The exhaust from the high-pressure cylinder is diverted to the receiver, the admission of live steam to the receiver is stopped by the closing of the passage *H*, and the locomotive is in position to work compound.

Both valves are of the piston type, with packing rings to prevent leakage. This insures an easy movement of the valves, and prevents the hammering action common to valves of the poppet type when automatically operated.

The Tandem Compound.

In this type of locomotive, designed in 1902, principally for heavy freight service, four cylinders are used, with a high and low-pressure cylinder and cylindrical valve chest on each side. The high-pressure cylinder is placed in front of the low pressure, both having the same axis; that is, the center of the low-pressure cylinder extended becomes also the center of the high-pressure.

Each cylinder with its valve chest is cast separately and is separate from the saddle. The steam connections are made by a pipe from the saddle to the high-pressure valve chest, and the final exhaust takes place through an adjustable connection between the low-pressure cylinder and the saddle casting. The valve, which is double and hollow, admits steam to the high-pressure cylinder, and at the same time distributes the high-pressure exhaust from the front end of the high-pressure cylinder to the back end of the low-pressure cylinder or vice versa, as the case may be, without the necessity of crossed ports. As shown in the accompanying diagram, *A* is the high-pressure valve by which steam is conducted from the live-steam openings through external cavities *B* and *B* to the high-pressure cylinder. The exhaust from the high-pressure cylinder passes through the opening *C* to the steam chest, which acts as a receiver; *D* is the low-pressure valve connected to the high-pressure valve by valve rod *E*. This valve in its operation is similar to the ordinary slide valve. The outside edges control the admission, and the exhaust takes place through the external cavity *F*. The starting valve connects the live steam ports of the high-pressure cylinder.



Steam Distribution in Tandem Compound Cylinders

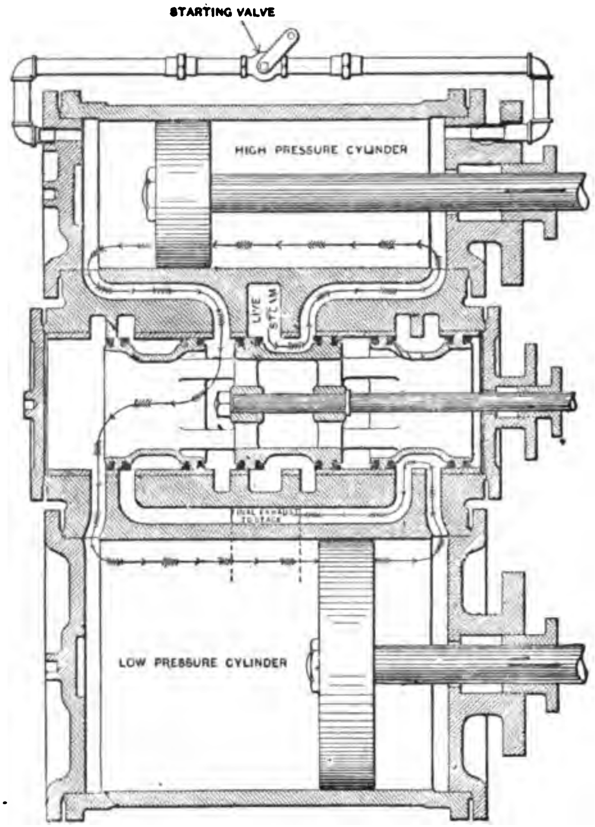
The Balanced Compound.

In all 2-cylinder locomotives whether single expansion or compound, and in 4-cylinder types such as the tandem and the original Vauclain compound, the reciprocating parts are counter-balanced by rotating weights in the driving wheels.

This arrangement of balance becomes unsatisfactory, particularly for heavy locomotives, and when extremely high speeds are attained. By balancing the reciprocating parts against each other the rotating balance in the wheels used to complement these parts can be eliminated, avoiding to a great extent the vertical shocks, and reducing the strain upon the track to that directly due to the weight of the locomotive. Consequently, with a self-balanced arrangement of reciprocating parts, the weight on the driving wheels may be increased without damaging the track, and higher speed is attainable without undue strain upon the working parts of the locomotive.

The balanced compound, designed by S. M. Vauclain and built by the Baldwin Locomotive Works in 1902, is intended to accomplish these results and simplify, as far as possible, the arrangement of the working parts.

The cylinders are a development of the original Vauclain 4-cylinder compound type, with one piston slide valve common to each pair. Instead of being superimposed and located outside of the locomotive frames, the cylinders are placed horizontally in line with each other, the low-pressure outside and the high-pressure inside the frames. The slide valves are of the piston type placed above and between the two cylinders which they are arranged to control. A separate set of guides and connections is required for each cylinder.



Steam Distribution in Balanced Compound Cylinders

The two high-pressure cylinders being placed inside the frames, the pistons are necessarily coupled to a crank axle. The low-pressure pistons are coupled to crank pins on the outside of the driving wheels. The cranks on the axle are set at 90 degrees with each other, and at 180 degrees with the corresponding crank pins in the wheels. The pistons therefore travel in the opposite direction, and the reciprocating parts act against and balance each other to the extent of their corresponding weight.

The distribution of steam is shown in the accompanying diagram. The live steam ports in this design is centrally located between the induction ports of the high-pressure cylinder. Steam enters the high-pressure cylinder through the steam port and the central external cavity in the valve. The exhaust from the high-pressure cylinder takes place through the opposite steam port to the interior of the valve, which acts as a receiver. The outer edges of the valve control the admission of steam to the low-pressure cylinder. The steam passes from the front of the high-pressure cylinder through the valve to the front of the low-pressure cylinder, or from the back of the high-pressure to the back of the low-pressure cylinder. The exhaust from the low-pressure cylinder takes place through external cavities under the front and back portion of the valve, which communicate with the final exhaust port. The starting valve connects the two live steam ports of the high-pressure cylinder to allow the steam to pass over the piston.

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The Destruction of Niagara Falls.

Niagara Falls are doomed. Children already born may yet walk dry-shod from the main land of the New York State Reservation to Goat Island, across the present bed of the Niagara River. Certain economic, industrial and political forces are working strongly toward this result, and their course can be stayed only by the strong hand of the Government.

In order to appreciate the nature and extent of these forces a general view of the geographical situation of the great cataract is desirable. Niagara River is the only natural outlet of the chain of four great lakes that discharge through it. Lake Superior, Huron, Erie and Ontario lie between the United States and Canada, and the chain of lakes borders on eight of the American States. These States stretch from the Atlantic Ocean to the Mississippi River, and the beds of the streams in some of them are from one hundred to several hundred feet below the water levels of the higher lakes. In Canada, Lake Huron and Lake Erie are so near to Lake Ontario that the development of great water powers by the construction of canals between either of the two former and the latter is practicable. Lake Superior has a surface elevation 601 feet above sea level, and discharges into Lake Huron with a fall of about twenty feet.

Lake Michigan also discharges into Lake Huron, though with only a slight fall, and the water from all three of these lakes then goes to Lake Erie where the mean surface elevation is 573 feet above tide water. A great difference in levels is the next feature, for the Niagara River, in crossing the strip of land, about twenty-seven miles wide, separating Lake Erie from Lake Ontario, drops 327 feet. At one point in its course it makes a perpendicular descent of 161 feet, and thus forms Niagara Falls, which the development of water power in both the United States and Canada is tending to destroy.

The falls owe their beauty and grandeur mainly to their great volume of water rather than to extraordinary height. Inasmuch as any diversion of the water of the Great Lakes reduces by just so much the amount that goes over the cataract, it matters little as to this result, whether water is taken from the lakes at Chicago or whether it is diverted from Niagara River near the upper rapids and then discharged into the gorge below the falls by means of canals, pipe lines or tunnels. Either process will dry up the falls if it be allowed to progress sufficiently far.

The possibilities of electrical transmission of energy have given great impetus to the development of water powers, and the many centers of population that may be reached by electric lines from the Great Lakes are a constant temptation to utilize their resources.

The greatest menace to Niagara Falls is the construction and operation of near-by power plants on either side of the river. At present two such plants are operating on the New York side, and the construction of three more on the Ontario side is well advanced; besides these, a smaller plant is already at work there. Each of these plants diverts water within one and a quarter miles above, and discharges it a little below Niagara Falls. In view of the relatively small expense at which water power can be developed by plants located as these are, it seems probable that strong efforts will be made to increase indefinitely their number and capacity as the years roll on. These efforts must be resisted if Niagara Falls are to be saved.

Popular ideas as to a practically unlimited supply of water at Niagara Falls, based on the area of the Great Lakes and the width of the upper river, are incorrect. Great as is the area of the lakes, it is only their discharge of water that maintains the falls and is available for the development of power. While standing on the bank of Niagara River a mile or more above the falls, where the river is from six to seven thousand feet wide, one is impressed by the apparently inexhaustible volume of water; a trip of several miles down stream to the Whirlpool Rapids, however, where the width of the river shrinks to only 300 feet, does much to change this impression. Of course, the explanation of this difference is that in the upper river the current is comparatively slow, while in the gorge it is very rapid.

According to the measurements of the United States engineers in the years 1899 and 1900, the normal discharge of the Niagara River for mean level in Lake Erie is 222,000 cubic feet per second, but this sinks at times to as little as 165,340 cubic feet per second. Great as is this amount, it is not beyond the capacity of water power developments like those now in progress about Niagara Falls to seriously diminish or even dry up the cataract. On a clear day, when the rising mist is blown up stream, a person near the center of the new suspension bridge over the Niagara River, or at Inspiration Point, on the Canadian side, can readily see the American and Horse Shoe Falls. The former, with its straight crest and silvery curtain, is the fall of beauty; but the latter, with its great mass of dark green water, seemingly rushed to the central point, its hidden foot, its loud explosion, and its fountain of spray, rising like white smoke high above all, is the fall of grandeur. Walk out on the rocks at the upper end of Goat Island, where the water just up stream seems ever threatening to rush upon and wash away the adventurer, and the reasons for the differences between the falls below are evident.

On the right, toward the Canadian shore, are three-quarters of a mile of river with that dark, unbroken surface that indicates deep water. To the left, between the island and the New York bank, there is a channel only 400 feet wide, whose rugged bottom raises the first line of breakers and carries all of the water that passes over the American Falls. How little of the river discharge passes on the New York side and how much on the Ontario side of Goat Island, perhaps no one can tell, though the former is estimated as low as 10 per cent. of the total; but certain it is that the American Fall now receives a comparatively small percentage of Niagara River water.

The international boundary, as defined by the treaty of Ghent, lies a full quarter of a mile toward the Ontario bank from the upper end of Goat Island, and yet it is estimated that at least three-fourths of the river discharge pass over the Canadian bed of the stream. It is reported that, in past years, when strong east winds have lowered the level of Lake Erie at Buffalo, the discharge of Niagara River has been so reduced that the channel between Goat Island and the New York bank has been dried up, and the American Fall has disappeared for hours at a time.

From these conditions it is evident that any large decrease in the discharge of Niagara River, either by diversion of water from the Great Lakes to the Mississippi River or to other rivers, or the creation of other channels for the flow from Lake Erie to Lake Ontario, or the construction of canals, pipe lines or tunnels between the upper river and the gorge below, must have a much greater tendency to destroy the American than the Canadian Fall.

It may be suggested, however, that the quantity of water already diverted, or likely to be diverted, from the Great Lakes or from Niagara River, is too small to make any notable change in the volume of water at either the Canadian or the American Cataract. This matter may be determined by comparing the volume of water already diverted, or likely to be diverted, with the total discharge of the river.

On the New York side of Niagara Falls the discharge tunnel of two of the power plants is said to have a capacity of 8,600 cubic feet of water per second, and the open canal of the third plant has a capacity of 7,700 cubic feet during the same time.

Across the river, in Queen Victoria Park, the hydraulic plants now under construction will divert as much as 32,100 cubic feet of water per second from Niagara River above the falls when they are in operation at full load. This estimate allows 12,000 cubic feet per second for one of these plants, 11,200 cubic feet per second for another, and 8,900 cubic feet per second for the third plant. In the same park the power house of an electric railway and the pumping plant for town water are estimated to draw as much as 400 cubic feet per second from the river. The total capacity of the power plants, either operating or under construction on both sides of the falls, is thus about 48,800 cubic feet of water per second. As the minimum discharge of the river is 165,000 cubic feet per second, the power plants just named will divert over 29 per cent. of this flow when operating at full load.

But this is not the only drain on the water supply of the upper Niagara River. A few miles west of Buffalo the Welland Canal turns toward the Canadian shore of Lake Erie and runs about thirty miles to Lake Ontario, with a drop of about 327 feet. As all the water traffic between Lake Erie and the St. Lawrence River passes through this canal, its consumption of water for purposes of navigation alone must be considerable, but in addition to this a rather large amount is used for the development of power. Some of this power is used in factories along the line of the canal, but one large electric system with its generating station near St. Catharines is operated also with water from the canal. In this power house, which has only recently been completed, the wheels will pass about 1,400 cubic feet of water per second when operating under full load.

If the new barge canal follows the line of the present Erie Canal from Buffalo to Savannah, a distance of 138.6 miles, this length of the new canal will be supplied with water from Lake Erie, as the corresponding length of the old canal is now, and it is estimated that the amount of water required for this purpose will reach 1,237 cubic feet per second. The Chicago drainage canal is said to require as much as 6,000 cubic feet of water per second. Under the so-called Love charter from the State of New York, work has been started on a canal that is to run from La Salle to the Devil's Hole, in the gorge below the Whirlpool Rapids; this canal will develop 150,000 horse-power. As the total head of water available between these points is about 300 feet, the quantity of water necessary to develop 150,000 horse-power of electricity will reach 7,400 cubic feet of water per second. It is also understood that the company now operating with one tunnel at Niagara Falls has the right to construct and use a second tunnel similar to the one now in operation, so that the two together will give a discharge capacity of 17,200 cubic feet per second.

From the foregoing it appears that the total diversion of water from the Great Lakes above Niagara Falls, for navigation, drainage and power purposes, will reach as much as 67,400 cubic feet per second when all of the works now operating, or under construction, are carried out to their full, authorized capacity. Even this volume of water, which is 41 per cent. of the minimum discharge rate of Niagara River, does not include the water taken by the Welland Canal for purposes of navigation and for the development of power by local manufacturing plants along its banks.

In 1899, when the minimum rate of 165,340 cubic feet per second was recorded for Niagara River by the United States engineers, the capacity of canals and power plants was probably not sufficient to divert from the river and lakes above the falls more than 10,000 cubic feet per second, instead of the 67,400 cubic feet of water previously mentioned. It is evident, therefore, that the completion and operation of works now under way must reduce the discharge of Niagara River over the falls by nearly 60,000 cubic feet per second, or about 36 per cent. of the minimum discharge. Whether the channel between Goat Island and the New York bank of the river carries 10 or 25 per cent. of the total discharge, it can not be doubted that the further diversion of nearly 60,000 cubic feet per second from the upper river and lakes will very materially reduce the flow over the American Fall.

The diversion of this great volume of water, even at the expense of some of the scenic attractions of the falls, is no doubt warranted by the great economic and industrial advantages that result from cheap power. It does not necessarily follow, however, that this process of water diversion should be extended until the values of existing power plants are depreciated by lack of water, the American Fall is dried up, and the Horse Shoe Falls are robbed of most of their grandeur.

Yet this is the tendency of the industrial and political forces now at work. Private enterprise can not be expected to stay its progress so long as there is a profit to be made by the diversion of Niagara water, and legislatures continue to give away franchises or peddle them out for trifling considerations.

For those who wish to see a fair share of the beauty and grandeur of Niagara Falls preserved, and even for those who wish to protect the great investments that have been and are being made there for power development, the unfortunate feature of the situation is that several of the immediately adjoining States have power to authorize the diversion of water from the upper lakes and Niagara River. The diversion of this water thus becomes a matter of competition, not only between persons seeking their own profits, but also between different governments that wish to build up their respective territories or increase their revenues. Further complication arises from the fact that the American States have no power, under the constitution, to enter individually into any treaty for the preservation of Niagara Falls, or for the regulation of the diversion of water from the upper river or the Great Lakes, because the treaty-making power is vested entirely in the federal Government.

That the competition of legislatures to develop power with Niagara River is a very active force may be gathered from the fact that within recent years at least six companies have been granted franchises by the State of New York to divert water from the river, and that the government of Ontario has authorized the diversion of as much as 33,000 cubic feet of water per second from the upper river within four years. More than this, the Ontario authorities have employed an expert hydraulic engineer to investigate the possibility of locating more power plants that will take water from the upper river, and he has reported that an additional 30,000 cubic feet per second can easily be diverted at and near Queen Victoria Park.

Other territory besides that of New York and Ontario offers opportunities for the development of power with water from the Great Lakes. The Illinois River at Joliet, only about twenty-five miles from Lake Michigan, has a surface elevation of 531 feet, and after flowing 325 miles across the State of Illinois, drops to 405 feet at its mouth in the Mississippi River. It is thus possible, by diverting water from Lake Michigan and discharging it into the upper bed of the Illinois or Des Plaines River, to develop a great local power, and also to increase any water power that may be developed along this river in its course across the State. A large diversion of lake water has already been made by the Chicago drainage canal in the way just indicated, and the power station near Joliet is to have a mean equipment of 24,000 horse-power. If franchises can be obtained from the legislature of Illinois, there seems to be no good reason to prevent further diversions of lake water and the development of other great powers on the river named.

In Indiana, the Kankakee River, a branch of the Illinois River, lies only thirty miles south of Lake Michigan, and much power could be developed by diverting water from the lake and discharging it into this stream. With Lake Erie on the north, the Onio River on the south, and numerous rivers crossing the State between them, Ohio would offer an attractive field for the development of power from lake water, were it not for the fact that a ridge of land, several hundred feet above the level of Lake Erie, crosses the State from east to west.

The part of Pennsylvania that borders on Lake Erie is so elevated that there seems to be no opportunity to divert its waters through the State. At numerous points along the seventeen miles of river front between Niagara Falls and the foot of Lake Erie, however, canals and pipe lines might be led off to the Niagara escarpment where the land surface drops nearly to the level of Lake Ontario; in this way water heads of about 300 feet might be obtained.

In Canada abundant opportunity exists for the development of great water powers by means of canals running from lake to lake. Georgian Bay, an arm of Lake Huron, lies at Toronto, within sixty miles of Lake Ontario, and even this distance might be reduced by a course through Lake Simcoe.

The surface of Georgian Bay has an elevation of 582 feet above tide water, or 336 feet above that of Lake Ontario. A canal from this bay to the lower lake would not only shorten the water route between Chicago and Duluth on the west and Montreal on the east by several hundred miles, but could be made to develop a water power limited only by the discharge of the three upper lakes—Superior, Michigan and Huron.

The strip of Canadian territory, about forty miles long and twenty-seven miles wide, between Lake Erie and Lake Ontario, might be crossed by any desired number of canals, substantially parallel with the Welland Canal and Niagara River, to utilize for power purposes the water head of 327 feet between these lakes. Even the Welland Canal may in the future be used to draw a far greater volume of water from Lake Erie for power purposes than it does at present.

From a consideration of the foregoing facts, it seems evident that the diversion of water from the upper lakes and Niagara River will be continued until the destruction of the American Fall, and possibly that of the Canadian Fall, result. Apparently the only hope lies in the intervention of the sovereign powers concerned.—Cassier's Magazine.

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*The Great Seattle Tunnel.**

No railroad magnet in the world today surpasses James J. Hill, the dominant and controlling spirit of the Great Northern's far-reaching and gigantic system. He certainly has a very wise and clear head on all matters pertaining to railway construction and operation. His wonderful success has demonstrated that beyond all question. His standing maxim has always been and is: "Low grades, and the shortest possible route." This great "practical theory" he has always carried out in railroad building—especially in the extreme West—on the Pacific Coast. He has invariably observed this rule; in a great many instances, without much reference to the *cost* of construction. If low grades were secured, and the most direct route obtained, his great end was accomplished.

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*Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

THE GREAT SEATTLE TUNNEL

Removing the last earth at the point where the 'North" and "South" crews met

(Flashlight)

So, in the progress of railway extensions—main trunk line and many feeders—of the Great Northern's system, some gigantic pieces of work were found necessary. Long tunnels were made, immense cuts were dug, enormous yawning fills were leveled and wide and deep canyons bridged. All these great operations involved the outlay of vast sums of money; but it was necessary in carrying out the "Hill program," as it is generally called.

Recently an immense piece of railway work was completed at the extreme western terminus of the Great Northern. It was a long and very expensive tunnel extending under a part of the city of Seattle, Washington.

Mr. Hill's keen eye and wise brain never overlooked anything—above everything else an advantage. To gain an advantageous entrance into the "Queen City of Puget Sound," and, for other good and sufficient reasons, he deemed the opening of this great subterranean route necessary.

Active operations were inaugurated on this huge task in May, 1903, and crowded forward with all vigor until its completion. The great work was accomplished very recently. For most of the distance the tunnel was cut through solid and very obdurate rock, thus rendering necessary a vast amount of blasting.

Owing to the nature of the work—the narrow space—only a comparatively small force of men could be employed to good advantage at one time. Work was begun simultaneously at each end, and pushed toward the center. The removal of the vast masses of shattered stone scattered by the blasts proved a herculean task.

Finally, the small army of borers and blasters met about midway of the tunnel. So accurate was the calculating and figuring of the engineers that when the opposite forces met deep in the bowels of the earth, the cut was perfect—the alignment varying only a few inches. From beginning to completion, the work was pushed without cessation—day and night—by relieving relays of men.

As the openings approached, the thunderous blastings became more and more distinct. At length the twinkling gleam of opposite lights were seen through the shivered rock walls. Then repeated choruses of wild cheers rent the dungeon-like air from the two opposite forces. On the evening of October 26, 1904, the wall was shattered and the last obstacle removed. Meantime, the concrete work on the sides and overhead had gone steadily forward. But much work remained yet to be done after the blasting was ended.

THE GREAT SEATTLE TUNNEL

The complete tunnel, showing "high line" timber platform used for concreting

(Flashlight)

. . . .

This tunnel was the heaviest and most extensive piece of railroad work done in the Northwest for many years.

The total cost of the work will approximate $1,600,000. The total length of the tunnel is 5,130 feet. It is 40 feet wide at the base (being arch-shaped) and 40 feet high at the crest of the arch. Throughout its length the tunnel is double tracked. With the exception of the bottom, the tunnel is enclosed with concrete from opening to opening. The concrete facing is very solid, being about 24 inches in average thickness, and very smooth and uniform. So massive and self-supporting is this great concrete arch that there is no danger of accident, by caving, or falling rocks. Some idea may be formed of the enormous quantities of concrete used in this part of the necessary work. The tunnel is lighted with electricity.

This subterranean road is now in active operation, and through it trains reach the main Western transcontinental terminal depot of the Great Northern.

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*Locomotives of Great Power.**

Boiler tubes should have the ends swedged and expanded so that they can be readily renewed, and making the firebox tube sheet holes ⅛ inch smaller and the front tube sheet holes ⅛ inch larger than the normal diameter of the tube, will provide for this.

Staying that portion of a large firebox tube sheet which takes in the lower segment of tubes, the beads of which are most liable to be worn out and burned off due to the use of cold feed water and its tendency to surround the tubes located in the lowest portion of the boiler, should materially reduce leakage due to wear and tear. Stays for this purpose made by welding threaded solid ends to boiler tubes, which can be screwed into the firebox tube sheet, and then expanded in the front tube sheet, appear to be admirably adapted for such bracing, and this practice should receive consideration.

A slower and more natural traveling of the gases from the furnace to the smokebox will result in good opportunity for conduction and convexion, reduced wear on the tubes and sheets, and the gases of lower temperature will have more opportunity to have their heat absorbed by the water. Larger tubes will tend to promote and complete the combustion for the reason that they will allow for better combustion than in the case of the smaller tubes, where the fire comes into immediate contact with large quantities of incombustible gas beyond the air supply and with tubes surrounded by water, so that gases are immediately cooled.

The less use of steam blower and water put into the boiler when fires are being cleaned, or when locomotives are standing still or drifting, the greater the probability that they can be kept in readiness for service without development of leaky tubes.

The present method of introducing feed water into locomotive boilers is the source of a large amount of trouble. It can be demonstrated that the water surrounding the lower tubes will reduce very materially in temperature during the process of filling the boiler to the extent of two or three gauges, and it has also been noted that the tubes which are most punished are those on the side of the boiler through which the majority of the feed water must enter.

One advantage the obsolete cross head pump had was that when the locomotive stopped, the inflow of water to the boiler discontinued, and this automatic operation can be largely credited for the reduced leakage of tubes at the time the practice was followed out. Supplying more water by continuous feeding when steam is being drawn from the boiler, and less when the throttle is closed. as when the locomotive is standing still or drifting, would result to considerable advantage in modern practice, even though the water may now go into the boiler considerably warmer from the injector than it did from the pump.

Tests made of the Serve tubes, in connection with American locomotives, have not given satisfactory results, due mainly to the difficulty through choking.

The use of a spirally corrugated boiler tube, in a limited way, has been made on several railroads during the past few years, with a view of determining some means to prolong the time of the passage of gases from the firebox to the smokebox, in order to impart more of the heat of combustion to the water. It is claimed that such an action is accomplished, with the additional advantage of the prevention of scale by the contraction and expansion of the corrugations of the tube. Other advantages reported are the increased circulation at the firebox tube sheet, and the greater rigidity which is very desirable in connection with the greater length now made necessary by locomotive design. The spirally corrugated tube may produce results comparatively with the Serve tube, without the disadvantages of the latter. However, the increased first cost and the shorter life due to inability to make reapplication the same number of times as can be done by the plain tubes, are the present obstacles, pending the final determination as to the actual practical results under the various service conditions.

The Belpaire design of boiler has not been generally received in America as a type that will produce the best results under general conditions. This design, when compared with the straight or

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***Abstract of a report by J. E. Muhlfeld, General Superintendent Motive Power, Baltimore and Ohio Railroad, for discussion at the Seventh Session of the International Railway Congress, held in Washington, D. C., May, 1905, and published in the Bulletin of the Congress, March, 1905.—Continued from June, 1905, Magazine.**

wagon top radially stayed types, involves greater weight and increased initial and maintenance cost and greater liability for failure or non-self-supporting surfaces through neglectful maintenance or operation. It is also impracticable to provide for the maintenance of a normal water level to meet the requirements of track curvature elevation, and on account of the flat crown sheet, there is more liability for the accumulation of foreign matter, and the resulting burning and deterioration of the sheets and leakage of crown stays in connection with unfavorable operating and water conditions, when compared with the types in more general use.

Until the advent of the modern wide firebox, the Wootten type of boiler has been used to a considerable extent for mountain service, and where endurance and large grate area have been the most essential features of the locomotive. This type of boiler has given very satisfactory results in connection with severe service conditions, but it is being largely superseded by the more recent designs that do not require the separation of the engineer and the fireman.

The Vanderbilt type of boiler, while embracing desirable constructive and maintenance features, has not been favorably received due to the restricted opportunity in this design to develop the grate area and draft necessary to produce efficiency and economy from the use of ordinary grades of solid fuel.

In designing a boiler and firebox, consideration to the maximum grade and elevation of the track over which the locomotive is to be run, so that the indicated water level will be maintained under all conditions, is of the utmost importance to the engineer and the fireman for maintenance of the maximum pressure without liability for damage, failure or delay. With the increased length of locomotive boilers, it is advisable, especially for mountain service, to make application of one or more surge plates above the top row of tubes; one near the firebox tube sheet, and another midway between that point and the front tube sheet; to prevent a rapid flow of water from one end of the boiler to the other, when tipping over summits after long hauls up grades which may have necessitated a forcing of the boiler, with the consequent reduction in water level, for the purpose of maintaining working pressure to prevent stalling.

The back heads of boilers should be made vertical to the top of the furnace door hole to provide accessibility to the back corners of the grate area for firing and to clean fires, to permit the use of sliding fire doors, to reduce the fire effect on door ring joints, and to prevent back lashing of the furnace heat.

The design of furnace door holes generally made use of, is such as results in the greatest rigidity where there should be flexibility, and the accompanying cracks and leakages are a constant source of annoyance and expense.

The use of ¾ inch, or heavier, front tube sheets in locomotive boilers should be practiced to prevent liability for bulging of these sheets towards the firebox end, and provide for a better support through means of tubes or tube stays for the firebox tube sheet.

The difficulty with leaky foundation ring joints due to nonflexibility, and water and workmanship conditions, may be considerably relieved through the use of double riveting, and by providing flanges in connection with the foundation ring corner construction to which the inside firebox sheets can be lapped and riveted, thereby making a more substantial fastening at a rigid point, which ordinarily does not allow for rivets to be passed through the mud ring to connect the outside and inside sheets.

The use of fusible plugs in crown sheets, is dependent upon the local requirements, but the practice if properly checked up, has merit, where water, gradient and operating conditions are unfavorable.

To provide for strength and flexibility in the bracing of boilers, the use of diagonal stays, in connection with the system of putting angle or "T" iron across the heads or on flat sheets, with either eyes or jaws at the head end, and bolts through either end, would, combined wherever possible with direct head to head stays, most nearly compromise the conflicting advantages and disadvantages of the various methods.

In locomotive boiler design it is not uncommon to strain the metal to one-third the ultimate strength, based on the theoretical calculation that a permanent deformation can not occur. The use of high pressures with unfavorable conditions and deterioration due to advancing age of boilers designed on this basis, will no doubt later produce such results as will warrant the inauguration of more substantial practices.

To keep boilers in serviceable condition, proper care has not been taken to reduce the number of joints, by making the firebox side and crown sheets in one piece, and where seams are necessary the lap has been too great, which, in connection with the use of button or cone head, instead of countersunk head, rivets and thinning down of the edges of the sheets to form a minimum thickness, has resulted in fire cracks and defects that are giving continual trouble. In addition, the use of improper tools and methods for the application and maintenance of seams, rivets, patch bolts, stay bolts and tubes, and for the renewal or repairing of defective parts, has contributed greatly to the ruination of firebox sheets and to failure. Where the firebox plates and tubes have been abused, it is not possible to put them in good condition without renewals and considerable expense, but competent boiler work applied to seams, cracks, stay and patch bolts and rivets and tubes, will do much toward prolonging the life and promoting satisfactory results.

With the present general construction and the methods for feeding, it is not an easy proposition to provide for flexibility and to maintain a uniform temperature in boilers, but improvements in care and operation can be effected which will very materially relieve the situation. The greater and more frequent the variation of temperature in locomotive boilers, the more the trouble that can be expected from leaky and defective parts, and until the proper methods for firing, feeding, washing out and handling, are given the consideration to which they are entitled, the results of the past several years' performance can be expected to continue. The time limit for washing out, firing up and otherwise cooling and heating locomotive boilers has been too greatly reduced through pressure brought to bear for the rapid handling of power at terminals inadequately equipped with proper facilities, and when the forcing of this work is followed out in connection with the cold water system for washing and filling up boilers, it must be expected that the latter will suffer accordingly. The firing up of locomotives by the oil and force blast method has also been responsible for detrimental results that would not have occurred by the continuance of the use of wood for this purpose.

The American locomotive boilers have been criticised in many instances for their low efficiency and excessive priming. Priming may be generally attributed to a small volume of steam space in proportion to water space and area of heating surface; failure to consider grades and elevation for curvature in design; nonapplication of surge plates; and the use of double seated or other types of throttle valves which do not provide for steam outlet at the highest point practicable.

The prevailing idea that the locomotive types of boilers now in use are wasteful, has come from their performance on the locomotives, while the cause is not so much due to the design of the boilers as to the tremendous rate at which they are worked, and the lack of information with respect to their performance when applied to stationary service. There are without doubt locomotive types of boilers that have been built within the past ten years, which, if operated on the same basis as water tube stationary boilers, would give an equivalent or higher evaporation.

Quite a number of water tube and combustion chamber firebox arrangements have been applied to locomotive boilers, but the advantages of less liability for deformation or cracking of firebox sheets, reduced number of seams, rivets and joints exposed to the fire, increased evaporative efficiency and economy, reduced risk from exposed sheets, and less renewal of stays, have been overbalanced by the increased first cost and expense for cleaning and general maintenance, more especially where fuel and water conditions are unfavorable.

There is little prospect of the existing general type of locomotive boiler being displaced. Its accessibility, number of parts and efficiency compare most favorably with water tube and other boilers of similar capacity, and as the frames are largely dependent upon the boiler shell for their support, it is impracticable to discontinue the use of the present type without undesirably increasing the weight of other parts. The present deficiencies can be largely overcome by a practical solution of the requirements to suit local conditions. The features of design, construction, circulation, ratios, maintenance and operation, and the improvement of feed water are becoming better understood, and arrangements which have been found impracticable, although theoretically correct, will and are being abandoned for the best interests of the general service.

Smokebox Draft Appliances, Brick Arches, Fire Doors, Grates and Ash Pans.

The features to be embraced in a smokebox and its draft appliances are: A smokebox with the least number of joints and no detachable operating covers, except the front door; the smallest volume consistent with ample netting area; the fewest parts requiring inspection, or liable to leak, wear or become obstructed and disarranged; accessibility for adjustment and to steam and exhaust pipes, superheating apparatus and tubes; an arrangement of the fewest dead, baffle and deflector plates to produce an even, unrestricted and sufficient draft and to maintain a self-cleaned condition in the smokebox; a smoke stack of the greatest internal and external length and diameter; and provision at the smokebox or stack to regulate the draft through the tubes.

At the present time the tendency is to revert to the generally good features that were embodied with the diamond stack smokebox arrangements, but with a continuance of the open stack and low exhaust nozzle. That a self-cleaning type of smokebox appliance can be produced which will give suitable draft for all classes of locomotives under varying fuel, weather and service conditions, is a problem that has not yet been solved, but with the improvements in boiler design, it is believed that a general arrangement can be devised, which, with provision and accessibility for minor adjustments, will satisfactorily meet the different requirements.

In connection with suitable draft appliances, it is most essential that attention should be given to the elimination of all steam pipes and joints from smokeboxes. The undesirable location of dry, crotch, steam, exhaust and blower pipes and their joints in smokeboxes has contributed largely to steam failures and high maintenance expense for the modern American locomotives, and wherever practicable, they should be removed, and placed outside where any leakage will not create interference with the draft, and where defects can be readily detected and repaired. While the use of superheaters will necessitate increased complication in smokeboxes, it remains for the benefit to be derived from this practice to determine as to the justification for their application.

It is generally conceded that boilers and tubes kept clean without brick arches are more economical in the use of fuel than when equipped with brick arches and having tubes obstructed. From a maintenance standpoint, the use of a brick arch and its supporting water tubes is undesirable. Whether the operating results justify its use, depends entirely on the local service and fuel conditions and the type of boiler and firebox. Well arranged and maintained brick arches will undoubtedly assist in facilitating combustion, and to prevent excessive smoke, pulling of fires and choking of tubes, all of which are considerable advantage, especially in connection with passenger locomotive service. Where the use of the brick arch has been abandoned, the substitution of properly located and size of air tubes at the firebox side and end sheets above the fire line, has often proved to be of considerable advantage, and with a nominal maintenance cost.

With wide grate area, the use of two fire holes, conveniently located in relation to the coal supply and the foot board are desirable, and with a well designed and conveniently operated sliding double fire door gear, the practice of right and left hand firing can be easily accomplished. Through such method, even under severe weather and service conditions, there has been little difficulty in supplying in an intelligent manner with reasonable physical exertion by hand shoveling, the necessary amount of a fair grade of bituminous coal, to meet the greatest tractive power that has as yet been developed in one steam locomotive. The use of double sliding fire doors will also relieve excessive cold air drafts through furnace door holes when locomotives are using steam, or blowers are being worked, in connection with the raking or cleaning of fires. Such an arrangement permits of the use of fire tools with practically no fire door opening, which is of decided advantage when compared with the swinging doors, which must be left wide open when the fire tools are being used.

Good provision should be made for drop grates of large size, in sufficient number, and properly located in the grate area to facilitate the cleaning of fires which may result from the use of inferior grades of fuel, improper methods for firing, locomotives in different condition, and long hours of continuous service. The use of dead grates is a necessary evil, and rocking grates should be designed so that they will be self-dumping, and permit of the greatest proportion of accumulated foreign matter and clinker to be shaken down through the grates without the use of fire tools or drop grates.

Large grate areas should be arranged in the same horizontal plane with the rocking grates, should be coupled in small groups for ease of operation, and all drop and rocking grates to be equipped with the most substantial hand or mechanical operating and positive latching gear to insure good alignment and working of these parts from the foot plate, without liability of their being destroyed through contact with fire that may be accumulated in the ash pan. The application of packing between the grate bearers and the firebox sheets to prevent a localized heat effect at this point of retarded water circulation and the location of the grate surface above the top of the foundation ring will, in connection with substantial finger type of short grates designed to meet the fuel requirements and to prevent warping or coming out of adjustment, overcome a great deal of the present trouble that is due to firebox leakage, clinkered fires, inoperative grates and insufficient or poorly distributed air supply.

The use of large ash pans, in connection with boilers of great capacity, is most essential, and these pans should be equipped with substantial and well regulated front, rear and side dampers, which can be operated from the foot plate. The self-cleaning double hopper type of pan, well designed and substantially constructed of heavy plate, so fitted, formed and stayed that no difficulty will come from warping or burning out due to lodging of fire and ashes; with serviceable cast iron cleaning slides and guides, and an arrangement to admit steam to thaw out, and water to wet fire and ashes, will usually give good results. Such an ash pan can be equipped with front and rear dampers of ample proportions to eleminate the necessity for the use of side dampers to admit air for combustion just below the foundation ring, with the resulting leaks from seams, stay bolts and cracked side sheets. While side ash pan openings should be provided in connection with wide fireboxes for cleaning purposes, they should never be used for air admission.

Solid and Liquid Fuel.

On some of the eastern railroads located in the anthracite coal region in the United States, the anthracite coal is used almost exclusively for locomotive purposes. This coal averages about 5 per cent. of volatile matter, and is furnished for locomotive use in grades such as culm or screenings, buckwheat, pea, broken and lump. The higher prices that the larger sizes of this fuel command for commercial purposes make their use almost prohibitive for locomotives. On this account, specially designed boilers of the Wootten type, with grate areas ranging from 50 square feet, and equipped with water tube grates and ample heating surface, are provided for the use of the culm and buckwheat grades of the fuel which would otherwise be of little commercial value.

The use of coke is confined mainly to the terminal, transfer, switching or tunnel locomotive service, where the regulations require the use of a smokeless fuel, and the price of the anthracite coal would make its use prohibitive. The grades of coke used are mainly the gas coke, which accumulates from artificial gas plants, and the forty-eight hour oven burned coke.

The use of liquid fuel is confined to the extreme west and southwest of the United States, where the cost, as compared with coal of equivalent value, is favorable. This oil is usually of the fuel or crude quality, of light and heavy petroleum nature, and is being used in connection with locomotives having fireboxes and tenders of a special design and construction, or with miscellaneous types of locomotives which can be equipped with the necessary oil burning appliances.

The use of wood is confined mainly to the smaller railroads in the logging districts.

In Canada, Alaska and the United States there is a considerable supply of peat, but its use has not been advanced due to the abundance of other fuels, and on account of satisfactory means not having been developed until recently for drying and preparing it for fuel purposes. Mechanical and electrical methods are now being developed for the pulverizing and briquetting of peat, which will no doubt bring its value as a fuel before the public. As prepared peat is almost a smokeless fuel, and burns out to a clean white ash without clinker, it would be desirable for locomotive use.

In the other portions of America, Canada and the United Sates not above enumerated, bituminous coal of the semianthracite, semibituminous, soft and gas qualities are mainly used. The semianthracite coal runs about 10 per cent., the soft, or semibituminous coal, about

20 per cent., and the gas, or bituminous coal, about 40 per cent. in volatile matter. These coals are supplied in the various grades of slack or screenings, pea, nut, run of the mine, steam lump and lump sizes. For terminal, switching and transfer service slack or screenings, pea and nut grades are largely used as a matter of economy. For heavy tonnage service, the run of the mine quality is mostly used in connection with locomotives having ample grate areas and heating surface. The steam lump and lump grades are used largely in connection with locomotives of the older types having insufficient grate area and heating surface, where forcing is necessary to meet the schedule and tonnage requirements.

The diverting of the better grades of bituminous coals for commercial purposes, and the desirability of effecting economy in the use of fuel, has made necessary such design of boilers and grate areas for locomotives used in the different localities as will best meet their fuel conditions. The use of fuel which can not be disposed of to advantage commercially, for locomotive purposes, should not be objected to, so long as the preparation is good and the analysis of the coal indicates a reasonable good proportion of fixed carbon, with low sulphur and ash.

Combustion.

A locomotive boiler is composed of two distinct parts, each with its independent function; the furnace for the combustion of fuel, and the boiler proper for the transfer of the heat generated into useful effect.

To develop the maximum power of a locomotive, the fuel supplied to the furnace should be consumed in such a way that the full value of its heat will be imparted to the water in the boiler. In order to accomplish this, the carbon and hydrocarbons in the fuel must be combined with a proper amount of oxygen from the air, otherwise the result will be incomplete combustion, and only a small portion of the heat in the fuel is made available.

With liquid fuel, it is a comparatively easy matter to regulate the supply of air and oil, so that the cumbustion is effected to give the best results, but with solid fuel, the conditions are so changeable, due to the varying chemical composition and physical condition, that good combustion will depend largely on the intelligence and skill of the fireman, and the draft, grate, ash pan and damper appliances on the locomotive.

All practical results have indicated that the most efficient locomotive furnace action will accompany the lowest rates of combustion when produced in connection with large grate areas and fireboxes, and even then the loss of heat in the coal by insufficient or excessive air supply, and by gases and sparks going to the smokebox will represent an extraordinary waste.

(To be continued.)

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Echoes from the Firing Line

Direction and Speed vs. Hail Storm.

I was firing a passenger run going east. A heavy wind storm accompanied by rain and hail came up from the northwest, while on the road. The engineer stopped the train, saying that to run through a hard storm like that would break all the window lights out of the train.

I suggested that we were going away from the storm and did not think there would be any more danger running than standing still, but he stopped, and we had to get in on top of the boiler head to keep from being bombarded by hailstones.

Now, knowing the conditions and circumstances, I would be pleased to have the readers of the Magazine give their opinions as to the danger of a hail storm, regarding direction and speed.

MEMBER.

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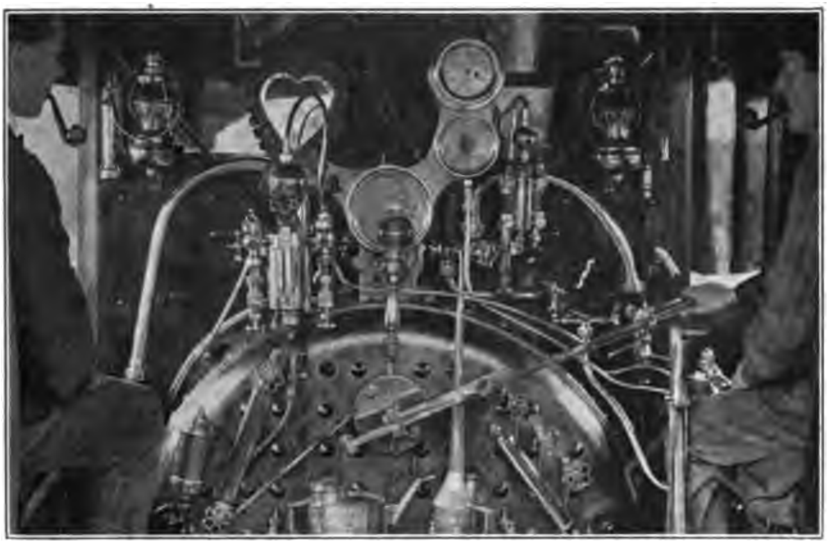
The Pet of the Family.

Engine 1253 is the regular engine on trains 5 and 6 running between Portland and Dallas, making the round trip, a distance of 125 miles, daily. We leave Dallas at 7 o'clock a. m. and arrive at Portland at 10.10 a. m., remaining in Portland until 6 o'clock p. m., when we again point the '53 homeward for another three hour and ten minute stretch.

Our train is a local passenger and we make about eighteen stops on an average, ranging all the way from one to twelve minutes each, so with all the delays and the high centers (?) it keeps us busy if we make it on time.



THE PET OF THE FAMILY

Interior of Cab of Engine 1253, Southern Pacific Railway

It is with us as with most engine crews who have regular engines, we are very proud of our engine, and well we should be, as the picture shows. All inside pipework and fittings are nickle plated, and at first sight a stranger is apt to be impressed with the thought that he is up against a polished soda fountain or something equally as brilliant.

The 1253 is run by Engineer Bob Casey, a throttle veteran, he having successfully controlled the mighty iron horse for a period of twenty-two years. This engine is an 8-wheel Baldwin, with 16x24-inch cylinders, and weighs about 32 tons.

Speaking from an engineman's point of view, she is a regular home. The men shown in the picture are Messrs. Casey and Beard, engineer and fireman.

F. L. BEARD.

* * *

Combustion.

I read with a great deal of interest the lecture given by Mr. Buell, and published in the Railway Club Proceedings of the May issue of the Magazine. It may be all right for that section of the country, but what is worrying us here in Vermont is how to get steam out of the real estate with which we have to fire.

Where is there a fireman of today who is able-bodied enough to swing a steel firebox door, that measures 28 inches by 20 inches, by 6 inches and weighs between 30 and 40 pounds, after each scoopful of dirt, when he has to put in anywhere from 10 to 14 tons in a run of 120 miles.

I would like to hear from some of the other brothers, who have had experience with the kind of stuff we are using, as to the best way to "keep her fogging" with the least exertion on our part (with or without black smoke). The only way that I can keep the pointer in place is to get a good heavy fire in at the start, then open the door and put in four scoopfuls as quickly as possible; as soon as the smoke clears up I repeat the operation. This keeps the black smoke rolling all the time, but it makes the "fog."

MEMBER.

* * *

Think Before Speaking.

I wish to sound a warning to all who may in any way be inclined to act hastily, for I shall cite a case that happened to the writer. I like to see everybody who fires a locomotive, be it a switcher or road engine, in the Order, and perform no work that is not to the benefit of any one. Some time ago I was working on a certain engine where a man whom I relieved was seen by a brother to be wiping the siderods and driving wheels. When I was so informed I spoke to him about it, and he got somewhat indignant over the matter.

Now, the man has fired nine years, and is not in the Order. I spoke to him about joining, also. Some few days afterwards he and I had a few words about the fire, as I thought he was going away without leaving me a good fire. This latter argument came about by my getting on the engine a little earlier than I needed to, and, as I thought he would take advantage of an early relief and go home, I looked into the firebox and spoke about the fire being very low. This man went to the office and reported every word that took place between us, and as a story goes farther it is always added to—the same with this one.

When I had given the matter no further thought I was called to the master mechanic's office. So I hope this will be a warning to any one who may be inclined to be a little hasty, even when it is for the good of the many.

I would like to hear from some of the brothers through the columns of the Magazine as to what they know about the Brown system of merits and demerits, also as to what the chances are for gaining a merit or effacing a demerit on any road on which it is in vogue.

MEMBER.

* * *

A Fireman's Tribulations.

The trains we haul on the road where I am employed are very heavy, and the amount of coal which the fireman has to handle is something wonderful, as we have to shovel all the coal twice, or "double the deck" as the boys call it. The engines are loaded down, pulling two trains in one, or as many cars in one train as would make two a short time ago. For instance, we have passenger trains of 15 and 16 cars, and as many as 17 and 18 cars, the latter being the limit. One or two years ago we fired engines on these runs with from 7 to 10 cars, and as low as 5 and 6 cars, which goes to show how the burden has been increased on the fireman.

The engineer, too, has his troubles, as these heavy trains place more responsibility upon him. The conductor and brakeman also have their troubles and say that it causes more work for them, but any reasonable man will admit that the greatest burden is placed on the fireman, as it is very evident that he is now doing the work that was performed by two men a year or two ago. A student said to me some time ago after making two trips:

"Well, old man, this job is a bit too fierce for me. I got about all the firing I want."

To my question as to what was the matter, he replied:

"I'll take my chances with the pick and shovel any day before I kill myself off on one of those hogs. Any old thing beats this to my notion."

I often think he was not much wrong, as the work at the present time is almost too much for human endurance, and would call the attention of the readers of the Magazine to the very sensible views expressed by Mr. J. A. Baker, of Railway and Locomotive Engineering, in the Railway Club Proceedings published in the March issue of the Magazine. Mr. Baker said in part: "You can't always get eighth-grade pupils to fill the position, neither can you always get the son of an employe. The father too often realizes that to stand up against the huge monsters of today requires a man with an iron constitution, and that his son will be broken in health before he ever gains promotion from the left-hand side of the 'battleship.' Why should the technical school graduate use the position as anything but a makeshift to tide him over till he finds something better?". Mr. Baker gives numerous reasons why well educated young men will not start in to fire the engines of today.

The fireman of today should have about eight days' rest in each month, but he can not afford it, as he needs every day in order to make a living, and in order to do so he finally kills himself off. He will make requests for coaling stations and other things to help him out. Sometimes these requests, although acceded to, fail to materialize, but the tonnage increases right along and the rules become stricter. He is, of course, required to look out for signals, keep the engine hot and break his coal, which under present conditions is two men's work. He is kept on the jump from one end of the road to the other, and in case of collision or derailment hasn't a ghost of a show for his life, and his duties are so arduous all over the division that he comes into the terminal like a dead man.

At railway club meetings and other such places the education of firemen seems to be of much importance, for at a recent meeting Mr. F. P. Roesch, of F. M. Hicks & Co., made some very interesting remarks, saying that he thought brains were needed just as much as brawn. I think the gentleman was right, and not only that but he needs both. As for the saving of coal on this road, they save the oil and let the fireman shovel the coal. Mr. Roesch said he thought too much was expected of a fireman now-a-days and referred to the pooling system, also the manner in which a fireman gets off his engine and sneaks through the alley, and you don't know whether he is white or black. He is looking for a good place to rest, or sometimes a place to die, when he is played out.

I think if the advice of these prominent men were followed in the way of helping the firemen by giving orders to use more oil, have the coal within easy reach of the firemen, and have the coal fit for use—not lumps weighing 400 pounds, making it necessary to break the gate to get it out, it would be better for all. When tonnage is increased to the extent that it is today it is only just that other changes should be made to help out the men who keep the wheels turning. For the remuneration received the fireman is the hardest worked man in railroad service today, and I say that any young man is very foolish who will start in to fire an engine under existing conditions for from four to six years of the best part of his life, and persecute himself for the sake of eventually becoming an engineer, for even in that position he will find more than a proportionate share of—grief.

MEMBER.

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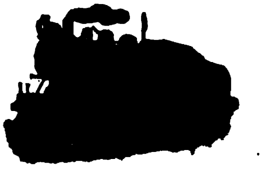


Baldwin-Westinghouse Electric Locomotive

On May 16, 1905, the members of the International Railway Congress, at the close of the session held in Washington, D. C., were given an exhibition of the Baldwin-Westinghouse single-phase alternating-current electric locomotive on the Westinghouse Interworks Railway.

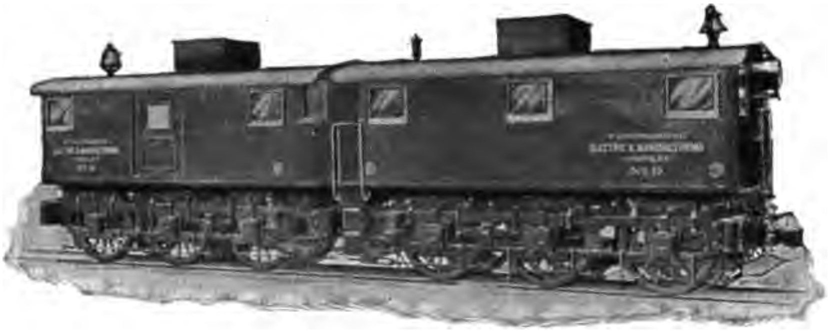
In demonstrating its possibilities and advantages it was first run light, and afterwards hauling a train weighing approximately 1,200 tons, which consisted of 50 new steel gondola cars. The locomotive was designed for slow speed freight service, and developed a drawbar pull of 50,000 pounds at a speed of about 10 miles per hour with the motors working at nominal full load output. With the train above mentioned, it is stated that the dynamometer car recorded steady drawbar pulls of 60,000 to 65,000 pounds, and as high as 100,000 pounds without slipping the wheels. With lighter trains the speed of the locomotive may be increased proportionately, the maximum being about 30 miles per hour.

Some of the characteristic features of this locomotive are as follows:

Weights and Dimensions.—Weight of locomotive complete (both halves), 135 tons; total length over bumpers, 45 feet; maximum height with trolley down, 17 feet; size of drivers, 60 inches; distance between centers of drivers, 6 feet 4 inches; extreme width, 9 feet 8 inches.

Equipment.—Six single-phase, single reduction motors, having a normal capacity of 225 horsepower each; gear reduction, 18:95; induction regulator control; pneumatically operated trolley; combined automatic and straight-air brakes; pneumatic sanders to sand tracks in both directions.

General Data.—Trolley voltage upon which locomotive is designed to operate, 6,600 volts; voltage on motors, 140-320; drawbar pull, 50,000 pounds, at a speed of approximately 10 miles per hour; maximum speed for which locomotive is designed, approximately 25-30 miles per hour.



BALDWIN-WESTINGHOUSE ELECTRIC LOCOMOTIVE

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Technical Contributions

Pyle National Electric Headlight—VI.

A very large percentage of electric headlight failures are due to the carelessness of the one who trims the lamp and applies the new carbon. As explained in Part V, the carbon feeds down by gravity, and so burns away.

All engineers who have had experience with the electric headlight have, no doubt, had a failure at some time or other when he was reducing the speed of his train upon approaching a station, or just as he brought his train at rest at the station. He has also at such times walked out on the footboard, opened the door to the headlight cage and "jarred" the lamp with his hand, when the light instantly came up; he then returned to the cab, satisfied that he had "fixed it," and so he had for the time being, but he had only jarred the carbon down through the clutch to the point of the copper electrode, when the circuit was re-established —just what the locomotive did constantly when in motion. There is no assurance now, however, when the magnet grows weak enough to release the clutch again, that it will not "catch" or hang up in the clutch as before. As explained in Part V, when an arc is formed and the carbon is burning away, as the arc grows larger and longer, less current passes from the carbon to the electrode, and the corresponding amount circulating in the solenoid tends to weaken the magnetic pull on the levers and clutch which are suspending the carbon, and at a certain point grows weak enough to release the latter, when it feeds down or falls of its own weight.

If the carbon is a little rough or out of round, it will be held up in the clutch so far away from the electrode that the current can not flow across, the circuit will be broken and the light will go out.

Carbons are molded and sometimes they are not found to be absolutely round or true, though they are supposed to be passed through a template when they should fall or feed through the clutch in any position. As previously stated, however, they are often found to be rough and irregular, and are the cause of much annoyance when not properly fitted.

When new carbons are drawn from the storeroom they should be passed through a clutch at that time to determine if they are true, or if they are liable to hang up in clutch. To do this properly, loosen thumb nut *79*, and remove carbon holder *300* from lamp, just as is done when preparing to remove the reflector from the cage; place the carbon in the carbon clamp, securing the top holder by stud for thumb nut *79;* return the carbon and clamp to holder, release the carbon and note if it will fall freely of its own weight entirely through the clutch. If it will not fall freely of its own weight until the bottom of the carbon clamp drops to the clutch, turn the carbon until a position is found in the clamp where it will, then return holder to lamp. It will not be found necessary to "jar" the lamp on this trip.

The writer wishes to emphasize the statement that the failures referred to above (when the locomotive is being brought to rest), are, in nearly every case, due to the fact that the carbon was not properly fitted. However, should the tension of spring *93* be too weak, the same trouble would be experienced, but this is seldom found. As a rule engineers have a tendency to run this spring a little too tight rather than too loose.

By referring to Fig. 8, Part IV, it will be noted that there is a small contact copper brush secured to the "number *88*" of the carbon clamp. The office of this carbon clamp is to hold and guide the carbon down, transmitting the current to the carbon by its contact with the guide bar or upper carbon holder *100*, and through the medium of the little copper contact brush. This contact brush must not bear too hard against holder *100* or the carbon will not feed down when the locomotive is at rest. Since it requires an imperfect contact to create an arc, and this carbon clamp can not be made to fit close enough to guide bar of upper carbon holder and at the same time allow the carbon to feed down, then if this little contact brush did not touch the upper holder *100*, when the locomotive was in motion there could be no constant and perfect contact between the carbon clamp and the upper holder, the light would "flicker" and "flash" and it will be found that the guide bar to the upper carbon holder and the flange on the carbon clamp will be fused.

In case your equipment has been running along nicely and giving a satisfactory light, then suddenly your light began tó "flash" badly, it will be found upon investigation that one of the binding post screws, *68*, is loose and is not holding the wire firmly to the binding post.

It is hoped that the explanations and instructions given in these articles relative to the fusing of the copper electrode will be thoroughly understood, as, if they are, the one great object the writer had in offering these articles for publication in this valued magazine will have been attained—that of reducing to a minimum, the number of copper electrodes and holders destroyed.

No doubt a great many failures have occurred in the past, due to the fusing of the copper electrode and holders, and engines have been run over the entire division with a lantern hung up in front, all because the engineer thought he had "burned her up." Very often this fusing takes place while the engine is yet in the hands of the hostler, for there are few engineers who are not thoroughly cognizant of the trouble when they see a shaft of green light thrown off by the reflector instead of a shaft of white light, and they would, of course, reduce the speed of the generator at once by throttling the steam.

However, should the reader ever meet with this difficulty, do not think it is necessary to go out of business with the electric headlight for the reason that you have "burned her up," for you have not; you have only destroyed the lower or negative point and holder. All that will be necessary for you to do to have the service of this devise is to remove the damaged electrode holder from the bottom clamp *53* and substitute an ordinary iron bolt, securing same in clamp by tightening up screw *68*, just the same as you would tighten this screw to secure the electrode holder. Be sure that one end of the bolt comes up to the center of the reflector, and that the other end is not in contact with the base of the lamp.

It must not be forgotten that a high electromotive force caused the copper electrode and holder to fuse, and it will also cause this improvised negative to fuse if the speed of the armature is not controlled by throttling. However, since copper fuses at 1,996 degrees F. and iron at 2,786 degrees F., it can be readily seen that the iron bolt would stand a much higher temperature than the copper, though it is not as good a conductor of electric current as the copper.

A carbon could be used in such emergencies, securing same in the bottom clamp as outlined above with reference to the bolt. It is preferable, however, to use the bolt for such emergencies, for the reason that this lower carbon will burn away, though only about half as fast as the top carbon, and since it is not possible to set this carbon straight under the top carbon, you would not only have the arc constantly lowered in the reflector, sending the shaft of light up, and off of the track, but in a short time this lower carbon would burn down until the top carbon would drop by the point of this lower carbon, and you would then have no light and in all probability a short circuit. Should a carbon be used for the negative, it will be found necessary to move point of same up in the center of the reflector about once in every hour it is burned, thereby getting the full benefit of the light.

The point of the carbon must set true over the point of the copper electrode in order to secure a good arc. Do not hesitate to take hold of the electrode and holder and bend in any direction to line up under the point of the carbon. This holder is made of brass and will easily bend without any fear of breaking.

The copper electrode should be pointed up with about one-eighth of an inch surface on point for this reason: electricity spreads itself out evenly all over the surface of the conductor through which it is passing, and if there was one-half of an inch point on the copper instead of one-eighth of an inch point, perhaps it could be better understood by stating that there would be a thin flat arc produced instead of a long arc as is seen when the copper is pointed with the one-eighth of an inch surface.

Focus of Lamp.—The focus of the lamp and the condition of the reflector determine the efficiency of this device to a very great extent. It must be understood that, when the arc is formed, or in other words when the lamp is burning, the dynamo and lamp are doing all that they were built to do. When an engineer meets another engine with a better and brighter light than the one he is running, in nearly every case the reason is that the "other fellow" has taken the trouble to focus his light and to clean his reflector.

The rays of light can not be drawn

together and on to the center of the track, unless the cage sets level and parallel with the boiler, and the front edge or face of the reflector parallel with the front edge of the cage.

For the engineer to properly focus the lamp, the locomotive should be facing a piece of straight track of not less than one-half mile in length. It will be noticed that the lamp is adjustable in all directions; move same until the best results are obtained on the track, then tighten hand nuts 54 securely. The light should be reflected in parallel rays and in as small a space as possible.

Although the whole apparatus may be working properly, if the lamp is not focused and the reflector not cleaned it will not be possible to get the full volume of light. With the best and brightest of reflectors there is always a certain percentage of light rays absorbed by the reflecting surface, and this absorbing of light is greatly increased by a dirty or dim reflector. It is therefore very essential that the reflectors be kept highly polished to obtain the best results from this device.

J. WILL JOHNSON.

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Slid-Flat Wheels from Undetected Causes.

The Air Line is not a retaining-valve road; that is, it is not officially ordered that pressure retaining valves shall be cut in when descending grades. But there are two or three pretty bad hills where many of the engineers require the head brakeman on freight trains to turn up five or six retainers next to the engine before beginning their descent. It is a bad thing to depend upon something of which you don't know the condition, and as retaining valves are not tested on this road it is a good deal like going out on the skirmish line, in battle, not knowing whether your gun and cartridge belt are filled with loads or blanks—your life may be depending upon that which you haven't got.

From the north there is a long, rather steep down-grade into the main division terminal of Smithville, containing several curves and deep cuts. The down grade continues through the city to the shops south of town, and there is a slow-speed city ordinance that is vigorously enforced which, together with the facts that yard engines are permitted to use the main track in the city yards on the time of delayed freight trains and that the same city yard is approached from the north around a curve through a deep cut requires some pretty fine air braking.

Just before pitching over this hill from the north is the sidetrack, called on the time-card "Gun Club," and since that fatal collision between the Purdue University special and a switching engine in the Indianapolis yards, our passenger engineers put their brake-valves in full release position as they pass Gun Club, going south, and leave them there.

On freight trains a number of retaining valves are cut in at Gun Club and not cut out again until the engineer whistles "off brakes" nearing the main yards—cutting in his driver-brake retainer before the others are cut out, to hold the control with the engine. But some of the boys have hit yard engines, or their cars, others have paid fines to the city for "scorching," while a few have had slid-flat wheels among the cars that had their retaining valves cut in coming down the hill, and it is of the latter I want to talk about.

Train 71 came down into Smithville yards the other day with stuck brakes and four pairs of slid-flat wheels on the third and fifth cars from the engine. Retaining valves had been used on the head seven cars. The air-brake instruction car is at Smithville, and the engineer and conductor told the instructor that they supposed they would get "torpedoed," but they wanted him to find what was the matter with those brakes; so he told the crew to come around to the air car after dinner, and, meanwhile, he inspected the brakes on the damaged cars after they were set in the repair track and had them tested, after which he told the air-brake inspector where to look for the trouble.

About 2 o'clock 71's crew and all of the other unattached railroad men were in the instruction car, and, of course, the first point that the instructor made, was, that knowing they would use retainers going into Smithville they should have tested the retainers, and the action of the brakes in particular on the head seven cars when the general test was made.

"But," observed the air-brake *radiator*, as Fin McCool calls him, "I have two brakes in this instruction rack that have the same defects as those cars have whose wheels were flattened this morning; they are for the instruction of inspectors and repair men; your duty is simply to test your air before starting with the train, and upon finding brakes with such defects cut them out and apply air brake defect cards, with the triple valve checked as defective; you are not required to state what *part* of it is out of order. One of these triple valves is also for the benefit of the officials, when I can get them in here, and is rather a startling exhibit to prove that retaining valves should be tested along with the rest of the brake equipment, or their use on cars prohibited. I wish to say to trainmen, however, to *be sure that the defect is in the triple-valve* before you so name it on the defect card, and I am going to make it a point of general instruction to you from now on until you have all had the chance to understand how to tell, in cases of stuck brakes and slid-flat wheels, whether the trouble is with a defective triple valve or not, and if not, where the defect really is. As well posted as you all are in general, during the last two years there have been but four cases of slid-flat wheels in which the triples were found defective enough to give cause, yet invariably the conductor has laid the cause of the damage to the triple-valve.

"Now," continued the instructor, addressing the engineer who came in on 71—"High Pockets Maginnis"—"Please state how you did your braking after you passed Gun Club this morning?"

"It is my experience," began Maginnis, "that the—ah—deciding factor in the question of successful air-brake control while descending lengthy grades, or those of high degrees of inclination, is the amount of pressure in the auxiliary reservoirs. It is the—ah—paramount disideratum, as it were, that those auxiliary reservoirs be kept at all times under a pressure of as near 70 pounds as possible. A heavy brake application considerably reduces their pressure, and in grade work an undesirably long time is required, thereafter, for complete recharge. If the speed is permitted to increase, the heavier reduction of pressure is called for with a corresponding increase in the possibilities of entirely losing control of the speed of the train. Therefore, the—ah—'palace of the king' was not yet over on my side of the summit of the hill when I made a 10-pound reduction.

"I had a close train line and a strongly-holding set of brakes; I made another reduction—about 5 pounds—and as at the first curve the speed was undesirably reduced, and as retaining valves were cut in on the seven head cars, I released, and had my auxiliary reservoirs recharged to their maximum pressures some time before it became necessary to again check the increase of speed, which I then did with a 5-pound reduction; my brake valve remained on lap continuously thereafter, until reaching the yards, at which point I noticed that my train line gauge pointer was standing at 60 pounds. I had 110 pounds of main reservoir pressure with which to release my brakes, and, as I pulled into number three track there was no resistance perceptible, such as a stuck brake would make, and I was surprised to learn that wheels had been slid and flattened."

"Now, George," said the instructor to the head brakeman, "what do you know about the cause of those flat wheels?"

"Don't know a thing about the cause, pardner," replied White Line George, "and the history of train 71 from Gun Club to yards, which it has jest been related by a gent of more voluble and copious persiflage is kerrect; but, one of them there cars with flat wheels arrivin'—fifth from the enjine—has got a cunjered air brake, an' it sure surprised me a whole lot.

"A-passin' Gun Club I turns up the retainers on the head seven cars, which we'd had them same cars right there all the way, an' Mister Maginnis had held onto 'em and used the air a-doin' all the switchin' at the several stations—which some conductors I know—without makin' any personal allusions—will hook onto anything they back against, exceptin' the water-wagon, regardless of their rates; and, neighbor, them brakes were all right—he set 'em, and they held fine, too.

"After turnin' up the retainers I set down on the front end of the fifth car from the enjine and let my feet hang over, right by the retainin' valves—yes, they was all box cars. Going through that cut at the first curve she all slowed down a right smart and Mister Man, here, released his air, as he remarked previous—but Mister Air Brake Man—I'm a-settin' right alongside of *one* kind of a retainin' valve which it ain't got nothing wrong with it with her handle turned down—they were not even a hesitatin' whisper of a leak from her then—but she's a *different person now.*

"When the brakes was released, as I'm a tellin' you, this yere retainer commenced a fizzling her air out—yes, that's all right so far, pardner, but jest wait; the fizzle ort to get weaker, until the cylinder pressure is down to only 15 pounds, and then shet off; but this interestin' appendix keeps a gettin' noisier all the time, till the rattle of that retainer weight sounded like a reaper comin' down Hamrick's attached to the hindend of No. 1."

Several incredulous observations from the audience aroused George's indignation: "Not on your life, friends," he denied, "I hadn't been a toyin' with the captain's peruna bottle. That pressure kept on a gettin' stronger right along till he set his air ag'in, as he says, an' the blow from the retainer then stopped. He left the brakes all set, a little bit, the rest of the way down to the yards, and when them wheels was slid I shorely don't know, fer jest as he sets 'em the last time, as I'm a tellin' you, I see a hobo back there a climbin' out a freezer, and I can't lose an interview with sech passengers; so I don't know nothing at first hand about slid wheels this yere trip of even date."

Tim Grogan was then asked what he knew about the cause for the wheels sliding; he is one of those conductors who, without making investigation, always lay such troubles to "defective triple-valve," but he was afraid to do so this time as it was apparent that the instructor understood the situation. But Grogan is never at a loss for some excuse of varying degree of plausibility, and he stated that it was his opinion that the wheels were slid and flattened while coming through the city, on the down-grade before reaching the yards. He was on the engine, standing in the left gangway, and as they crossed Jefferson avenue, the first street crossing, a party of "rubes" standing in front of the interurban station and close to the railroad track, were eating bananas and as he noticed, looking back, were throwing the peelings under the wheels. This theory of a probable cause was about at par with many of his previous explanations of mysteries of the service and seemed to be, laughingly, approved of by the main body of the audience; and the instructor knows Grogan.

"The cause of this slid-flat wheel was, in this instance," began the instructor, "really defective triple valves; but their condition could, and should, have been ascertained by terminal test before starting out with the train. The defective condition of the one on the fifth car could not have been discovered without testing with the retaining valve cut in—in fact there was no defect existing unless it was cut in—and knowing beforehand that retaining valves would be used on certain cars they should have been tested; otherwise do not depend upon them. If they are necessary to safety what would be the result if it was found—too late—that their piping leaked—the ⅜ unions loose? It is the result of 'taking chances' that so many accidents occur—in this case merely the expense of eight pairs of flattened wheels and whatever may result from the delay of the two cars of dressed beef.

"Generally speaking," he continued, "wheels are not slid from a defective triple valve, for it can only, in sticking, prevent brake release and has no power to *increase* the brake cylinder pressure above the normal; and cases of flat wheels are invariably found under empty cars.

"But here we have two loaded cars with every wheel flattened, and the triple valves are to blame—but between the triples and the result some*body* is also to blame.

"Triple valve No. 5, in the instruction rack happens to have the same defect as the one on the fifth car in your train this morning—see if it doesn't act that way," and he applied and released the brake with service applications and also emergency; nothing wrong with it, seemingly, no blows or leaks and the gauges on train line, auxiliary reservoir and brake cylinder indicated the regular action of pressures and graduating valve; except, when the brake was almost full-on during service application and the cylinder and auxiliary gauges were about 10 pounds apart, with the engineer's valve on lap, those two pressures ran suddenly together; of course, train-line leakage could have caused that."

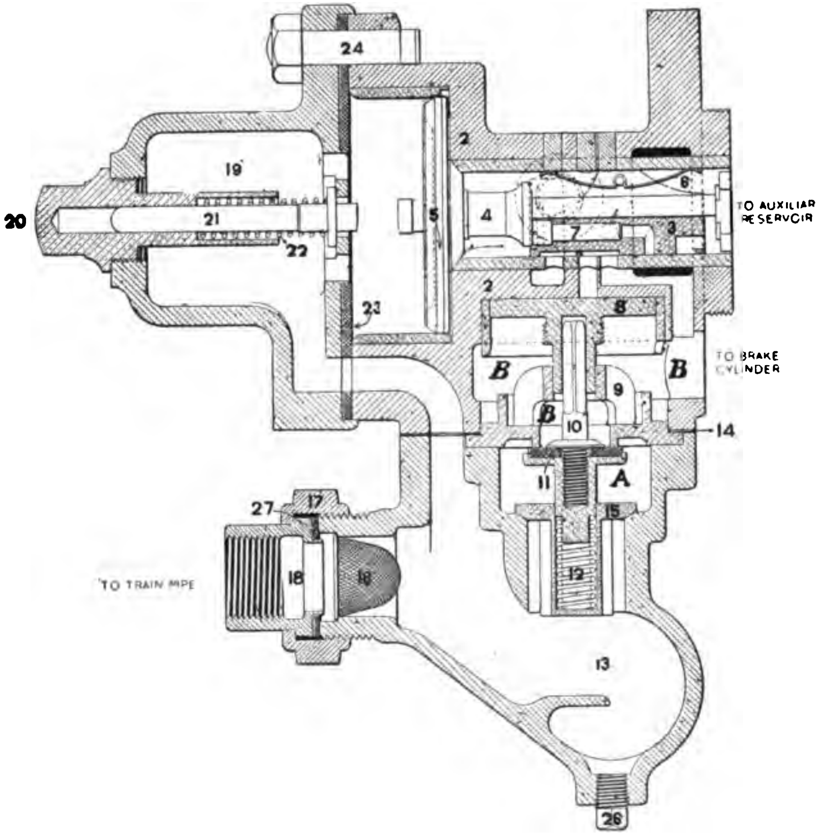
Then he made a service application, turned up the retaining valve handle on brake No. 5, and released the brakes; there were about 40 pounds on the brake cylinder gauge as number 5's triple went into release position, and although the pressure began to flutteringly escape from the retaining valve the cylinder pressure slowly increased instead of falling, and George's statement was verified as the noise of the rattling retainer weight grew louder, and we saw the brake cylinder pressure at 70-pound equalization with the train line.

"The cylinder pressure will remain where it is and the blow continue as long as the retainer is up and triple valve in release position," stated the instructor. Finally he turned the handle down and the exhaust was very heavy from the high pressure, and the gauge slow in falling; but it fell to zero, the piston went back in the brake cylinder and there was absolutely no afterblow from the retaining valve.

Our fellows are pretty well posted on air, but here was something against all reason.

"She hadn't ort to do sech things," said White Line George.

"Dese triple valves is adjusted to five positions," observed Fin McCool, "like Grogan's watch, and dis'n like his'n, has got inta de sixt."



Triple Valve

"The gauge proves," said Maginnis, "that the brake cylinder is highly flatulent when the retainer is cut in, but at other times in seemingly perfect condition. It is the most peculiar action that I have ever witnessed in connection with the air brake."

"Yes," replied the instructor, "but it is a trouble that undoubtedly has been existing ever since the quick-action triple valve came into use, and has cost the railroads a lot of money, possibly, for slid-flat wheels, but not causing any trouble when the retaining valve is not in use, and therefore remaining undiscovered and unknown;" and at that he unrolled a colored chart of the Westinghouse quick action triple valve in colors.

"I would represent it by the following plate." He called attention to the emergency valve of which *11* is the rubber seat, and explained that while the train-line pressure beneath it will hold it closed so that air can not pass to the brake-cylinder opening above it, the spring *12* is for the purpose of keeping the valve closed after the train-line pressure has been discharged, or has become about equal to the cylinder pressure when the brake has been applied.

"The free height of the check-valve

spring—that is, its length when new and unused—is 1¾ inches; in its place in the triple valve it is compressed to but 1⅜ inches, and this compression shortens it permanently; every time an emergency application is made there is a further shortening by the spring being knocked down suddenly. I will take this new, unused spring measuring 1¾ inches, and I will fully compress it between my fingers and thumb until the coils are together, solid, and now upon releasing it we measure it and find it has lost ⅛ inch of its height; so you see how easily it becomes shortened.

"When it becomes less than 1½ inches, freely expanded, trouble begins. The check-valve spring in this defective triple valve under discussion, has been contracted to only 1 5-16 inches, and is the cause of the damaged wheels. I have warned the inspectors," continued the instructor, "to always measure the spring when they have a triple valve taken apart, and to condemn it if it has shortened to 1½ inches; quite a number have been removed that I know of.

"It is my belief, that owing to the frequent compression of the check-valve spring, and its importance, as only lately realized, that it should be made of a more resiliant material than brass—say, nickeled-steel piano wire, like the graduating springs."

The boys were surprised at the simple cause of the rather expensive trouble; and after observing that an air-brake expert—not having thought of this point of weakness—could take the triple valve apart and fail to locate the cause of its odd action, the instructor explained why it did act that way.

"As I stated, the check-valve spring is compressed into a space of 1⅜ inches between the check valve and emergency valve, and if the spring is shortened to only 1 5-16 inches the emergency valve will fall 1-16 inch from its seat when the train-line pressure has been reduced in chamber *A* to lower than—or an equalization with—the brake cylinder pressure in chamber *B*.

"Let me say, here," he interjected, "to help you in your analysis of triple-valve action, that as the train-line pressure is reduced below check-valve *15*, the pressure in chamber *A* above it is equally reduced, always, through leakage; no matter how new and well fitted may be the check valve, the volume above it is so small that the dust between the valve and seat will permit it to fall in place with the fall of train-line pressure.

"Suppose that a full-on application gives 50 pounds brake cylinder pressure; that will be secured by a 20-pound train-line reduction; if we make service reductions of less than 20 pounds, the train-line pressure remains greater than cylinder pressure and holds the emergency valve seated; if we reduce the train line to less than the 50 pounds cylinder pressure the emergency valve will drop from its seat, but upon recharging the train line the brake-cylinder pressure will be discharged so rapidly after the triple valve goes to release position that the emergency valve will be quickly forced up and closed again by the train-line air.

"Now we will turn up the retaining-valve handle, and a rather light application and release will not cause any irregular action, because, as the gauges show, train-line pressure is still so much greater than that of the brake cylinder that the emergency valve is held seated; but continued train-line leakage, or a further reduction by the brake valve—which I shall now make—so nearly equalizes train-line and brake-cylinder pressure that leakage through the weakened valve completes it, and the emergency valve drops from its seat. Now we will release brakes; the triple piston and slide valve are moved to releasing position, but the brake-cylinder pressure escapes so slowly through the small outlet in the retaining valve that it is continually resupplied through the open emergency valve, and slowly increases, as the gauge shows, to the full 70 pounds train-line pressure. Turning down the retainer handle lets cylinder pressure escape so fast, as you see, that the train-line air jams the emergency valve up tightly to its seat, the brake is properly released, there is no blow and the air brake on this car is apparently in perfect condition.

"The bad result from a defective check-valve spring is brought out most plainly when there is not less than five or six cars of air coupled-up, and the farther back in the train the better for trouble; and to test to find such cases it is best with retainer cut in, to make not less than an 18 or 20-pound reduction, and release the brakes by placing the engineer's valve in the running position.

"When Engineer Maginnis made his second application on the hill he threw the fully charged auxiliary reservoir into direct supply to a brake cylinder, itself already charged to 70 pounds, and whose wheels were probably already skidding; you know the result.

"The brake apparatus on this other car with slid-flat wheels was probably in excellent condition, except that there was a slight leak through the rubber emergency valve seat *11*—so light that the resultant blow from the retaining valve was not noticed by George; here is a triple valve in the rack with the same defect, and you will not hear it without coming very close to it. We will make a very light reduction—like Engineer Maginnis' last and permanent application coming down the hill to Smithville—and the triple slide valve is moved into service stop position, closing the atmospheric exhaust port and stopping this leak to the atmosphere, but not stopping the leak to the brake cylinder; the light application permits enough auxiliary reservoir pressure to enter the brake cylinder to get the piston out past the leakage groove, and the piston packing leather being tight and no other brake cylinder leakage, the feed of train-line pressure through the leaky emergency valve gradually increases the pressure in the brake cylinder until it is equal to that of the train-line and auxiliary reservoir—65 pounds—which is enough to slide wheels on an empty, or lightly loaded car, or sometimes, even, a heavy loaded car. The wheels under this car were sliding, no doubt, from soon after making that last 5-pound reduction, clear to the yards. The previous use of the retaining valve, of course, had nothing to do with this latter case.

"Think how often that there may have been so slight a leak in an emergency valve as not to have attracted attention," the instructor concluded with, "and with a brake cylinder practically free from leakage and a train held for some distance by a very light train-line reduction you can imagine how often slid and flattened wheels have been the result. Sometimes a small splinter or cinder has caused the leak and been blown out afterward, before the air brake was inspected. So, it is a delicate matter placing the blame for slid wheels, at certain times, and I only want you to be watchful, careful, do the best you can and help us to find the cause for these troubles, because the conditions will change before anyone but you gets to look for them."

WILL W. WOOD.

The Air Brake Association Convention.

Continuing the report of the Air Brake Association convention, begun in the previous number, the second day's session opened with a discussion of the paper read the previous day by Mr. P. J. Langan (D. L. & W.), chairman, on

Train-Pipe Leakage in Freight Service; Effects, Causes for and How to Reduce.

The paper first called attention to the importance of tight train pipes and the difficulty of obtaining and maintaining such where new cars are inspected by outside firms, whose men lack understanding of the importance of tight and well-clamped train pipes and responsibility for results after the cars go into service, and where the ability of the brakes to control and stop trains safely and without unnecessary shocks is largely lost sight of in the effort to get trains out of yards quickly. It was plainly stated that this contributed to delaying them in getting over the road. It was well stated that while the transportation department speaks of tonnage trains, the concern of the air-brake men is the number of cars, as each car added means an increase of train-pipe leakage.

Mention was made of the difficulty of handling long trains with excessive leakage without damage in braking, and the opinion was expressed that enginemen are sometimes censured for breakage that they are not really responsible for. Attention was called to the use of air brakes instead of hand brakes to control trains down mountain grades, rendering tight train pipes of even greater importance, and it was stated that a 50-car train can not be handled successfully down a 1¾ per cent. grade with a train-pipe leakage of over 4 pounds per minute.

A most important statement, that the discussions amply confirmed, was that "The leaks through spongy hose are the hardest to detect and can only be successfully detected by the use of soapsuds. Where soapsuds are used and the defective hose thus detected are immediately removed, it has been found that it reduces the trouble arising from train-pipe leakage to a surprising degree." The leakage due to the partial separation of hose couplings, resulting from frozen hose, was also mentioned. It was pointed out that by purchasing good hose, giving them proper care, and using the soapsuds test as late in the fall as possible, a great improvement would follow. Better attention to hose coupling gaskets was urged, too.

Other serious factors treated very thoroughly were the proper positions of the train pipe and the angle cock, and the extra distance the hose must often cover owing to the excessive slack between cars. Data given from a test of 38 cars, on which the three rear hand brakes were set and the slack was first pushed in and then pulled out, showed that the total amount of slack thus developed was 17 feet and 7⅝ inches, an average of 5.87 inches between cars. Of the total, 13 feet 2.3 inches was coupler movement, or 4.4 inches each.

Another valuable test was to show the effect of varying train-pipe leakage, and was as follows:

Engine with 9½-inch Westinghouse air pump; main reservoir capacity, 21,000 cubic inches; speed of pump, 140 single strokes per minute; pump in service eight months; capacity of pump charged 21,000 cubic inches from 0 to 100 pounds pressure at speed of 140 strokes in 1 minute and 54 seconds.

Cut in to train of 55 cars at 1:20 o'clock, train pipe and auxiliary being dry.

Train pipe pressure on engine at 1:25, 40 pounds. On 55th car, 39 pounds.

Train pipe pressure on engine at 1:29, 55 pounds. On 55th car, 53½ pounds.

Train pipe pressure on engine at 1:31, 60 pounds. On 55th car, 58½ pounds.

Train pipe pressure on engine at 1:33, 65 pounds. On 55th car, 64 pounds.

Train pipe pressure on engine at 1:36, 70 pounds. On 55th car, 68½ pounds.

Total time to charge from 0 to 70 pounds, 16 minutes.

A 10-pound reduction was made in train pipe pressure, and the amount of leakage taken per minute by a gauge on the first car and the recording chart on the 55th car. This was found to be 4½ pounds per minute, the pressure dropping from 60 to 50 pounds in a little over two minutes. A release of brakes was made when the train pipe registered 50 pounds, and the time taken to recharge to 70 pounds was 8½ minutes.

The train pipe leakage was increased to 9 pounds per minute, and it required 12 minutes to recharge from 40 pounds to 65 pounds pressure, and 6 minutes to charge from 65 to 70 pounds. The pressure on first car registered 70 pounds and on the 55th car 67½ pounds.

As the table shows that it required, with 4½ pounds leakage, 5 minutes to charge from 60 to 70 pounds, and it has been fully demonstrated from experience that only 2 to 2½ minutes elapse between the release and application of brakes on 1¾ to 2 per cent. grades, it proves beyond a doubt that if the grade is long it is not practical to successfully handle these trains with this amount of leakage.

A 12 months record in one yard showed 265 brakes cut out for leaks that time would not permit of remedying, 365 triple valves removed because of leaking at exhaust when in release position and 332 angle cocks changed owing to leakage. It was stated that these represented only the most serious leaks, the ones easily noted by the noise they made.

The following quotation shows some service conditions found and the possibilities of improvement where time and help are had:

"Twenty trains, each consisting of 40 cars, showed an average leakage of 4½ pounds per minute. Twenty trains, each consisting of 55 cars, showed an average leakage of 4 pounds per minute. While this is not considered excessive, we know that where time and attention are given to this work these figures can be cut in two.

"On a 75-car train, with two inspectors, train charged from yard testing plant, after 65 minutes' inspection and repairing, the leakage was but 2½ pounds per minute. Another train of 75 cars on which the inspectors were given 40 minutes showed a leakage of 6 pounds per minute.

"Leakage in all of these tests was taken by charging the train pipe and auxiliaries to 80 pounds pressure and making a 10-pound reduction so that pressure did not flow back from the auxiliary to train pipe through the triple feed grooves.

"By placing the handle of the brake valve on lap position and taking train pipe leakage is not a proper method, and does not give true conditions existing in train pipe. The train pipe alone on a 75-car train contains a volume of 40,000 cubic inches, while the auxiliaries on the same number of cars contain a total of 112,500 cubic inches, so that a leakage of 9 pounds from train pipe alone would only show about 2½ pounds if taken by the latter method."

The too common farce of "inspecting," "testing" and "repairing defects" under conditions of low-pressure, and one or two men to do this work on trains of 50 to 75 cars within 30 to 40 minutes was strongly emphasized.

The following "remedies" were recommended to better the present conditions:

"(a) Not less than four ½x2½-inch clamps to secure the train pipe to the body of the car. A number of cars have only two clamps each, fastened to the end sill. This is bad practice, as the lags become loose and allow the train pipe to shift, breaking the 1-inch nipple at the triple valve.

"(b) Train pipes to be applied with as few ells as possible.

"(c) Heavier and better quality of malleable iron fittings.

"(d) Extra heavy pipe with good full thread.

"(e) Installation of yard testing plants and a sufficient number of inspectors to operate same, so that leaks can be detected and remedied before the engine couples to the train, thus relieving the air pump of this amount of work.

"(f) A liberal supply of air hose and coupling gaskets at all inspection points.

"(g) Train pipes applied to cars so that unions and release valves can be easily tightened and renewed. Any number of cars are equipped today where it is impossible to apply release valves without dropping the cylinder from the sills of car, and 1¼-inch unions are placed between center sills where it requires a hammer and chisel to tighten or loosen same.

"(h) The elimination of piece work in piping and testing cars in repair shops.

"(i) Air hose to be removed when cars are on repair tracks, and work to be done on car that requires the removal of trucks. This is to prevent cutting the inner tube, causing hose to burst.

"(j) Having sufficient inspectors to separate hose by hand in terminal yards.

"(k) A reasonable length of time in which to make the necessary repairs. The inspection is one point, but repairing the defects when found is the main point."

Considered along with this paper was one by Mr. Robt. Burgess, W. A. B. Co., on "Air Hose," in which he stated that on a certain road the cost of air hose maintenance on about 25,000 cars was, in round numbers, $30,000.00. The details of purchase covered 27,600 hose, 19,750 hose coupling gaskets, 6,500 couplings, over 12,000 hose nipples and more than 37,000 hose clamps. While stating that the cost is known to be higher than it should be, he called attention to some of the causes, of the possible saving thus implied and that the expense given represented 5 per cent. interest on an investment of $600,000.00.

Discussion: Mr. Langan (D. L. & W.) in opening the discussion, commended "Woods Rubber Preservative," a liquid preparation for protecting the outside of hose from the weather, saying they had used it for a year, that he believed it reduced the number of porous hose and stiff ones in cold weather, that they used it only on new hose and that it makes the hose disagreeable to handle, owing to the odor and stickiness, for some little time.

He said that while safety in case of break in twos and emergencies necessitated using all brakes on trains of even 100 cars, yet the results were not satisfactory in service applications, as even a 10 or 12 pound reduction was not certain to apply all brakes.

F. B. Farmer (W. A. B. Co.) stated that much trouble was experienced in the Northwest by reason of the leakage due to stiff hose in very cold weather and that a test in Winnipeg last winter, with the temperature at zero, showed that some hose of a well known, high grade make, about two years old required about 5 to 7 pounds pull at the coupling, when disconnected, to move it 4 inches, while other hose that were practically new gave a resistance from about 18 to 27 pounds. Through taking this up with one hose maker, whose product stiffened most in the test, a hose was produced that promised as good as the best in the tests mentioned.

Mr. W. C. Hunter (Mgr., N. B. C. & R. R.) stated that train pipe leakage is now a serious matter, that he had tested the rubber preservative and had not found it entirely satisfactory and said their weather conditions are very severe, at times changing from wet to 25 degrees below zero in 24 hours. He had found rigidity of both new and old hose about equal. He believes the train pipe is too short and suggested making the standard an inch longer, i. e., moving each angle cock one inch farther out from the end of the car.

Mr. C. D. Getchell (B. & A.) said he had experienced much trouble from train pipe leakage and believed much was due to faulty location of angle cocks, having found some 3 inches out of standard, practically shortening the hose this amount. He favored reducing the standard distance and doing more and better repairs in shops and on repair tracks.

Mr. Culver (N. Y. C. & H. R. R. R.) suggested that if the angle cocks stood out farther from the ends of the cars, more might be broken off by coupler knuckles passing. He believed it important that angle cocks be turned right, saying he had seen some pointing outward instead of toward the center of the track.

Mr. Geo. R. Parker (G. N. Ry.) said they had received gaskets from other than an air brake company, that were 1-16-inch wider and 1-32-inch deeper than standard and, owing to their being very hard to insert, had to condemn them.

Mr. T. W. Dow (Erie) in answer to a question as to the cost of the hose preservative, said the manufacturers had guaranteed to apply it for 2 cents per hose. He strongly condemned allowing hose to be pulled apart and expressed the belief that the angle cock changes, two speakers had recommended, would result in more being broken off.

Mr. Burton (W. A. B. Co.) expressed the same opinion about the angle cock location, said that with hose and angle cocks turned right he had obtained good results, even with some train pipes farther out of the center than standard, in zero weather and with long trains. He considered the quality of the hose important and recommended the Master Car Builders' standard.

Mr. L. M. Carlton (C. & N. W.) expressed the conviction that some in charge of car departments failed to appreciate the seriousness of hose stiffening from cold, recommended adhering to the standard angle cock location and said the common fault was variation from it. On Mr. Dow stating that the standard is not possible on some cars, Mr. Carlton said if the train pipe had to be longer, the angle cock should stand farther from the center of car.

Mr. Geo. R. Parker (G. N. Ry.) said he had found splicing hose unsatisfactory.

Mr. C. C. Farmer (W. A. B. Co.) confirmed this from his experience and said testing such in water would soon kill the practice.

Mr. L. M. Carlton (C. & N. W.) said his road had discontinued the splicing hose.

Mr. F. B. Farmer (W. A. B. Co.) urged more attention to the simple matter of turning hose so the couplings will connect without twisting, failure in this damaging many gaskets and, owing to the difficulty of placing and holding the couplings in the proper position, result in many improperly made and leaky couplings. Answering Mr. Hunter's question as to how test could be made with soap suds in zero weather, he conceded the impossibility of doing so outside of shops, but expressed the conviction that if done there then and at all other opportunities when the weather does permit, the reduction in train pipe leakage and break in twos would be surprising.

Mr. P. J. Langan (D. L. & W.) said his experience was that hose coupling gaskets caused the most leakage and that porous hose came next, others being, in their order, triple valve unions and the 1¼-inch train pipe union. The last two he thought due mainly to loose train pipes and brake cylinders and auxiliary reservoirs.

Mr. C. C. Farmer (W. A. B. Co.) said he had found, with the soap suds tests, as many as 50 per cent. of new hose defective, and that his experience with it on the road demonstrated that the car coupler damage, resulting from burst hose, decreased very materially with the removal of hose, if it should be porous, especially where trains were long.

Mr. Culver (N. Y. C. & H. R. R. R.) also considered hose coupling gasket leakage very serious, stating many of the gasket grooves are enlarged by rust and others choked by it, both preventing tight gaskets.

Mr. Geo. R. Parker (G. N. Ry.) said a record of 12,000 hose removed showed 50 per cent. porous, 40 per cent. burst and 10 per cent, torn off. He considered removing hose *about* to fail very important. He favored oil and graphite for pipe joints and the use of adjustable pipe dies.

Mr. S. G. Down (W. A. B. Co.) favored the use of oil and graphite on the nipples of hose applied, so as to facilitate both application and removal.

Owing to the fear expressed by one member that removal of all porous hose would be impossible, owing to inability to get enough hose, another urged that its introduction should be gradual and that it be commenced only at the most favorable places so as to cause the least possible delays to traffic.

Mr. Burton (W. A. B. Co.) said two years' experience with the soap suds test on the C. Ry. of N. J. showed 70 per cent. of all hose removed were porous and that it reduced the burst hose to from 7 to 9 per cent.

Mr. E. G. Desoe (B. & A.) had found the acid in the water drippings from coal cars ate holes in the pipes and remedied it by placing the pipes outside of the cars. He believed much hose coupling gasket leakage is due to bruises on couplings and that emergency valves also contribute to train pipe leakage, such being difficult to locate. He objected to the use of graphite and oil on pipe joints and recommended oil only.

Mr. F. M. Nellis (W. A. B. Co.) called particular attention to the wide variation of slack between cars, mentioning 5 inches to 9¾ inches. He considered Eastern roads were experiencing a great increase of trouble from train pipe leakage owing to the very general gain in air brakes coupled up, as compared with a year ago.

Mr. S. H. Draper (N. P. Ry.) said their greatest trouble arose from the excessive slack between cars and the stiffening of hose from cold. He recommended furnishing train men with hose coupling gaskets and a tool for cleaning the grooves and forcing the gaskets into place; also providing inspectors to separate the hose couplings in terminal yards, saying they had tried it with very good results in the number of hose applied.

Mr. C. B. Conger (Int. Cor. Schools) recommended so applying hose clamps that the bolt ends will be downward in use.

Mr. H. A. Wahlert (T. P. Ry.) preferred the clamp bolts up on signal hose and down on air brake hose.

The discussion on this paper was then closed. F. B. FARMER.

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The Single Door for Wide Fireboxes

During the early experience in the use of wide fireboxes for bituminous coal, it was at first thought necessary to use two doors in order to give the fireman opportunity to distribute the coal uniformly, and to provide greater convenience in operating the slice bar on the grates. Considerable difficulty has been experienced with these double doors, and it is now generally agreed that one long single door is decidedly the best practice. At the recent meeting of the International Railway Master Boilermakers' Association at Buffalo, Mr. B. T. Sarver, foreman boilermaker at Fort Wayne, Ind., made a report in which he favored the single door and said that it was the general practice of the Pennsylvania road, which has 402 wide fireboxes on the lines west of Pittsburg, and all of them have the single door. He says these engines are very easily fired, and the firemen have no difficulty in distributing coal uniformly.

With the single door, however, it is necessary to have rather a wide door, but not a round one. Two doors are really inconvenient for the fireman, as there are few of them who can fire as accurately with one hand as with the other, and the chances are that there is good firing on one side of the box, while on the other side it may be very poor. With two doors there is more chance to admit cold air, which is detrimental not only to the joints at the door but to the tubes and other parts of the firebox.

The single door is considered to be slightly more economical, probably on account of the prevention of excess of cold air. From the shop standpoint it gives less trouble, both as to construction and to maintain. The firemen are taught the practice of keeping the door shut between each two shovels of coal, and with the double door there is a tendency to leave the door open and even both doors when the engine is charged with coal.

In the discussion on this subject there was a general agreement among boilermakers from different parts of the country that the single door was decidedly the best, and the double door for wide fireboxes will probably become obsolete.—The Railway Age.

Air-Brake Examination Questions for Enginemen

By Will W. Wood

Question 86.—What sizes (outside measurement) of auxiliary reservoirs should be generally used in connection with brake cylinders 8-inch, 10-inch, 12-inch, 14-inch and 16-inch piston diameter?

Answer.—With the 8-inch cylinder an auxiliary reservoir 10-inch by 24-inch for tender and truck brakes, and for driver brakes an auxiliary reservoir 10-inch by 33-inch should be used. With 10-inch cylinders in any service a 12-inch by 33-inch auxiliary reservoir; with any 12-inch cylinder a 14-inch by 33-inch auxiliary. A 14-inch cylinder should have a 16-inch by 33-inch auxiliary, and 16-inch cylinders use a 16-inch by 42-inch auxiliary reservoir, except in the case of the 16-inch driver-brake cylinder, which may be furnished with auxiliaries 18½-inch by 41-inch, though the latter size has been abandoned.

Q. 87.—With the high-speed brake what pressure should be carried in (a) the train line, and (b) main reservoir? (c) How is the adjustment quickly effected from common quick-action pressures to the high-speed pressures?

A.—(a) 110 pounds. (b) 130 pounds with a common sized train, to be increased when a lengthened train line requires it—the high pressure on the slide-valve of the triple demanding at least 20 pounds of excess pressure. (c) Train-line pressure is changed in its amount of supply by reversing the position of the handle on the "reversing-cock" on the engine. There is a stop-cock in the pipe leading to the low-pressure top of the duplex pump governor; if this cock is open the pump governor will stop the pump when the lower main reservoir pressure has been attained, but by closing the stop-cock the governor is inoperative until the highest main drum pressure has been pumped-up.

Q. 88.—What is the pressure in the brake cylinders of a high-speed-braked train at (a) the instant of emergency application, and (b) the finish of the stop?

A.—(a) 85 to 88 pounds per square inch. (b) 50 pounds on the driver and truck brake and 60 pounds on other brake cylinders.

Q. 89.—With the high-speed brake (a) what is the maximum brake cylinder pressure obtained at a full service application? (b) How much must the train-line pressure be reduced to secure this full application, and (c) why is the cylinder pressure greater on the coach brakes than can be obtained by a full service application of a train line of only 70 pounds?

A.—(a) 60 pounds per square inch in the brake cylinders of the cars, and the tender, also, if it is equipped as it should be with a quick-action triple-valve; there should be but 50 pounds pressure in the driver and truck-brake cylinders. (b) Twenty-five pounds reduction. (c) The very high cylinder pressure that can be furnished with the high-speed brake being undesirable at low speeds or station stops, the automatic reducing-valve will, at service applications, blow off from the brake cylinder all pressure above a certain fixed amount as fast as it can be supplied by the graduating-valve of the triple, and with *any* heavy reduction, either service or emergency, the cylinder pressure can not be held permanently above, nor go below the figure at which the reducing valve is set. The maximum emergency application brake cylinder pressure with the 70 pounds train-line brake is considered to be as high a pressure as may be safely used at moderate speed, so the reducing valves are adjusted to that pressure, which is 60 pounds with quick-action triple-valves and 50 pounds with the plain automatic driver and truck-brake. Those pressures may be obtained, therefore, with the full service application—the first 20 pounds' reduction putting 50 pounds' pressure into *all* brake cylinders, and no greater application should be made, unless danger demands it, for safety against slid-flat wheels. If a further reduction of 5 or 6 pounds be made the driver and truck-brake reducing valve will merely blow off all surplus cylinder pressure above 50 pounds, but the tender and car brake cylinders will fill up to 60 pounds and blow off anything above that pressure. Seventy pounds of auxiliary reservoir pressure can not, at service application, furnish the brake cylinder with more than 50 pounds' pressure per square inch; therefore, with the high-speed brake a greater braking power by 20 per cent. may be obtained with the train brakes at a regular stop, if desired, than with the old 70-pound brake.

Q. 90.—(a) Why should all service stops with any passenger train be made with two applications, unless the train is an unusually long one? (b) Explain your idea of how such stops should be made, and (c) why should not a two-application stop be made with a very long passenger train?

A.—(a) In order that the braking power may be strongest while the speed is highest and the rapidly revolving wheels tend to throw the brake-shoes from them, and can safely use, and need, the highest power; and that when the speed has been decreased to so low a rate that high brake power is unnecessary and the danger from wheel sliding is introduced, that then the brake cylinder pressure may be low, so as to complete the low-speed stop. (b) Begin the application later than if a one-application stop were to be made and make a heavy service reduction, ranging from 12 to 20 pounds, according to conditions of speed, grade, distance, etc., and then when near the station and the speed is greatly reduced, make the pre-release—release and return the brake-valve quickly to lap; then the high cylinder pressure having been discharged, the tilted trucks having righted themselves, the compressed draw-bar springs have expended their power and there is no further danger of wheel-sliding, for the stop can be completed with a very light reduction of the lower train-line pressure with none of the bad after-effects mentioned. The point at which the pre-release should be made can not be told the engineer—he must find that point for each stop, and make the first application extra heavy and the second one extra light, always. (c) Although supposed to be closely coupled and held solid by the platform, buffer and vestibule springs, a very long passenger train does permit a certain amount of stretch, and, as the forward brakes release first, an *extraordinarily* long train had best be handled like a freight train in stopping.

Q. 91.—Why is it especially necessary, and without undue risk of running by, that all service-stops with the high-speed brake should be made with two applications?

A.—It is necessary, as a rule, because a full brake application is often made and it is undesirable that that power—equaling emergency power of the quick-action brake—shall be exerted at low speeds. With the 70-pounds brake, the first application being a heavy one, greatly reduces the auxiliary reservoir pressure, and if by chance the engineer pre-release the brakes before he gets the speed sufficiently reduced, his remaining brake power may not be great enough at the second application to keep him from running by, but with high-speed pressure, however, two full 20-pound applications and releases could be made, separately, and after the second release there would still be 70 pounds' pressure in train line and auxiliary reservoirs—all that the brakes would stand.

Q. 92.—If a high-speed braked train should take on a car not equipped with the automatic reducing-valve, what will prevent its wheels from sliding at a heavy brake application?

A.—Its wheels will slide unless means are used to prevent it. Every train-box should contain a 60-pound safety-valve that may be screwed into the brake cylinder of the extra car by removing the oil-plug.

Q. 93.—If an engine is equipped with the combined automatic and straight-air driver and tender brake, at what pressure should (a) the reducing valve be set, and (b) the driver and tender brake safety-valve blow off at? (c) How may the reducing valve be adjusted to supply exactly the correct pressure with no special air gauge on the straight-air line?

A.—(a) 50 pounds. (b) 52 pounds. (c) If the black pointer of the duplex air gauge registers correctly, adjust the feed-valve attachment of the engineer's brake-valve to a feed of 50 pounds and make an exchange by using it, now, as the reducing-valve for the straight-air line, and put the one removed from that line on the engineer's brake-valve and adjust it to 70 pounds.

Q. 94.—(a) What might be the effect of running with the straight-air engineer's valve on lap? (b) How would you test for leaks in either leather seat of the double check valve? (c) What would result from using the straight-air brake while not carrying excess pressure in the main reservoir?

A.—(a) If the leather seat on the straight-air side of the double check-valve leaked, an application of the automatic brake would charge the straight-air line with pressure that could not escape at its lapped engineer's valve, and when the triple-valve should start to release the brake the confined pressure in the straight-air line would force the double check-valve over against the outlet to the triple-valve exhaust, and in closing it prevent the release of the brake. The straight-air engineer's valve should be run in the release position. (b) Have the straight-air engineer's valve in release position, and if neither it nor the triple-valves leak there will be no sound from the former valve, but an application of the automatic brake causing a blow from the exhaust port of the straight-air engineer's valve indicates a leaking packing-leather on the straight-air side of one or both of the double-check valves; with the automatic brake in release, make a straight-air application, and a blow from the exhaust port of either triple-valve indicates that the double-check valve in connection that triple-valve has a leaking packing-leather on the side next to the triple. (c) It would apply, and stick, the automatic brake, because an application of the straight-air would reduce, somewhat, the main reservoir pressure, and that would draw the pressure back to it from the train line.

Q. 95.—In the steam-heating of passenger trains what pressure should be carried on the steam-heat gauge on the engine, and what should be the maximum pressure with different numbers of cars?

A.—Any pressure asked for by the conductor without exceeding the limit, which should allow 25 pounds for a one-car train, with 5 pounds additional for each other car taken on. A car may be heated comfortably in severely cold weather if the pressure in its train pipe is maintained at 20 pounds, and, as the steam pressure falls in very cold weather at the rate of about 5 pounds per car as it flows back through the train line and supplies the heating coils, hence the rule for increasing the pressure.

Q. 96.—Regarding the steam-heat, what should the engineman do one mile before reaching the train terminal, or a point where engines are changed, cars to be set out or any hose disconnection to be made?

A.—Shut-off the supply of steam-heat pressure entirely, by closing the main valve on the boiler. Do not close-off, or change the adjustment of the reducing-valve at this time.

Q. 97.—When the engine is coupled to her train and the steam-heat pressure turned on at the boiler valve, if no steam will pass through the reducing-valve what should be done?

A.—With the Mason steam reducing-valve, the dash-pot, or steam port to it, sometimes fills with lime and soda-ash and sticks the piston, with the result that the main valve will not be opened. As a temporary expedient take down the dash-pot (first shutting off the boiler valve) and if the dasher can be removed from the pot place under it a small nut or over-all button—something that will elevate it ¼ to ⅜-inch, replace dasher and screw up the dash-pot in place, which will force open the main steam valve and permit full pressure to pass through to train heating line, which must then be regulated by the boiler valve. If the dasher is stuck fast in the pot don't pound it—lay a washer of the stated thickness on top of the piston to raise the main supply valve open.

Q. 98.—What tests should be given to an air-braked train before leaving terminal?

A.—All air to be used must be coupled, all cocks and valves in their proper positions and no brakes cut out unless known to be defective beyond immediate repair; the train brakes must be applied by the engineer's brake-valve, on test, and release not attempted until sufficient excess pressure has been pumped-up, and then if any brakes fail to release without being bled, such should either be cut out or watched closely thereafter. Piston travel on all cars should be as near to 6 or 7 inches as possible, allowing a variation toward short travel or loaded cars and longer on the empties—in fact, the brakes on the entire train should be put in as near to correct condition as time and circumstance will admit of. In passenger service the signal to release the brakes in testing should be made by the train air signal from the rear car in the train.

Q. 99.—Of what does a "road test" consist—made after doing switching or picking up cars?

A.—It is a duty of such importance, that, like the "ounce of prevention" being worth a "pound of cure," it should never be neglected—no matter how great the hurry. It is made as assurance that all angle-cocks between cars are opened and that the engineer can set and release all brakes; generally omitted through the erroneous idea that it "takes time." In picking up cars their train line should be made-up, so that when the engine couples on the air can be turned in to it immediately, and by the time they have pulled out of the siding, backed down the main line and coupled to the train their auxiliary reservoirs have fully charged. The trainman that couples the hose from the picked-up cars to the rest of the train should step back alongside the brake cylinder of the car that had previously been the head car in the train, signal the engineman to apply the brakes—a 10 or 12-pound reduction—and if the brakes apply *on this one car under his observation* and release in the natural way when he signals for brake release it completes the "road test;" as the train pulls out, of course, the trainmen must observe that *all* brakes are released. If the train has merely been cut to clear road crossings, or the engine has been detached to take water, etc., after re-coupling the engineer should make a service-brake application—using the same number of pounds train line reduction in all such tests—and by noting the length of time of the train line exhaust he can tell whether all angle-cocks have been opened, or enough brakes cut in to give him control of the train.

Q. 100.—When and how should a "running test" be made?

A.—A running test doesn't prove much, if anything, and will seldom discover errors in the condition of the air brakes that should have been noticed at a correct standing test; and a bad feature is that the latter test is frequently omitted where the rules call for a subsequent brake application while running. On many roads the rule is that running tests must be made within 200 feet of distance from the start, and there are cases on record where the brakes of a passenger train were cut in on only the engine, tender and baggage-car, or even the driver-brake alone, and an application at so slow a speed had an effect that deceived the engineer into thinking he had control of all brakes in the train. Running tests should not (as a general rule) be made on freight trains, as upon releasing the brakes while running there is too much danger of breaking the train in two. With a passenger train, to be effective at all, running tests should be made *as an addition to the regular standing test*, and not to take its place; should be made when the speed is high enough to require the use of all train brakes cut in to check it, and be made two miles before reaching a long or heavy down-grade or any other point where an air brake failure would not be tolerated. It is directed that all air brake tests be made, invariably, by the engineer's brake valve, but the only correct running test that can be made within 200 feet of the leaving point is to require the trainman to open the cock on the tail-hose—that should *always* be attached to the rear train line hose of the last coach in the train and hanged to the hand rail—and if there is a heavy flow of pressure and an application of the brakes the test is a true one—the engineer placing his brake valve in full release position when he feels the effect of the application, and returning it to running position as he feels the speed increase—all this without shutting off steam from the engine.

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Movement of Trains

By H. A. Dalby

The New York Subway.

When the writer was a small child he heard much of the "underground railroad" and in his vivid imagination he saw trains of cars hauled by steam locomotives through miles of tunnel away below the surface just as they were familiarly seen above ground. His disappointment was great when he learned that the "underground railroad," as he imagined it, never existed. But we who have passed the threshold of the twentieth century may witness in the New York Subway the complete fulfillment of the figurative words so familiar a third of a century ago. The Subway is, indeed, an underground railroad, built because there was no room for it on top of the ground, constructed, operated and equipped as other railroads and doing a heavier business than many a road on the surface.

The present limits of the Subway are confined to Manhattan Island, but plans are in progress for its extension to Brooklyn and other points in the vicinity, and no doubt a few years will witness the operation of an extensive system of these tracks in and about the city.

The main line begins at City Hall Park, the entrance to Brooklyn Bridge, and runs northerly and northwesterly, passing the Grand Central Station, to 104th street, about seven miles, where two branches diverge, one to the east and northeast running under Central Park and the Harlem River to the "Bronx" district, the other continuing northward. Each of the branches are, approximately, seven miles in length, making 21 or 22 miles in all.

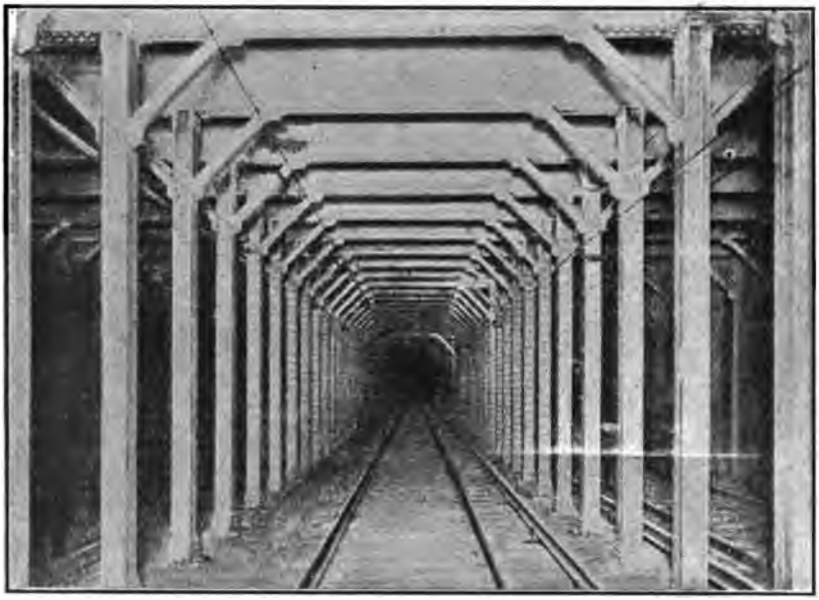

Fig. 1. INTERIOR VIEW, CUT-AND-COVER SECTION

(From Railroad Gazette)

The upper part of New York City is far from level and some quite difficult construction work was necessary in building the road. The name "Subway" was given it because the greater portion of it is under the streets of the city, but this does not accurately describe it in its entirety. There is, in fact, about five miles of elevated structure in the north end of the city carrying the track over depressions in the surface, while Manhattan Valley is spanned by a magnificent steel viaduct half a mile in length. (Fig. 2.) In contrast with this, there is a tunnel through one of the hilly sections which is two miles in length, the longest in the United States except the Hoosac. The residents of this district are served by two stations in the tunnel which are reached by elevators, the tracks being one hundred feet below the surface. The remainder of the line is known as the "cut and cover" section, i. e., a cut covered with a roof of glass, partially transparent, relieving somewhat the utter darkness. (Fig. 1.) This is the character of the road under the business portion of the city.

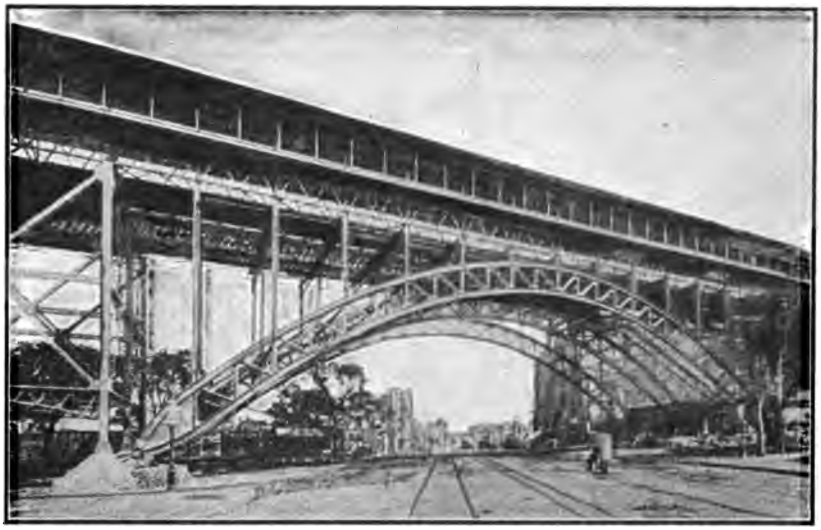

Fig. 2. MANHATTAN VALLEY VIADUCT, BROADWAY AND 129TH STREET

(From Railroad Gazette)

There are four tracks on the main line, the two inside for express trains and the two outside for locals. On the branch running to the north there are three tracks, and one of these is used for express service during "rush hours," which means southward in the morning and northward in the evening. The use of the third track is, of course, determined by the direction of the greatest travel at certain hours. At no time is it used as single track for trains in both directions. The other two tracks are used as double tracks in the usual way. On the branch to the east there are but two tracks with no express service.

There are 43 stations for local trains and five for express trains. Where there is a local and express station at the same place they are separate, each being next to its own track but connected by passageways so that passengers may go from one to the other. Local stations are one-fourth of a mile apart and express stations about one and a half miles apart. There are ten passenger elevators where the stations are too far below the surface for stairs to be used.

This immense work was completed under the heart of the business part of the city with practically no interference with any of the buildings or injury to water, gas, steam or sewer pipes or the many telephone and telegraph wires and pneumatic tubes which are laid under ground. In many cases these obstructions had to be removed and relaid in other locations. Neither was there any serious delay to traffic in the streets.

An idea of the amount of travel within the territory served by the Subway may be obtained by the statement that four elevated lines now parallel the Subway as well as several surface lines. They carry about 500,000 passengers per day. During rush hours it is sometimes almost impossible to handle the crowds and it is thought the Subway will relieve the crowded condition to the extent of 100,000. It is estimated that 250,000 people are transported between the business portion of the city and their homes, in all directions, each business day. The first three days the ticket sales in the Subway numbered from 310,000 to 350,000. Of course many rode only for the novelty, but it gives an idea of the capacity of the Subway and the service it will doubtless be called upon to perform.

The motive power is electricity and the system is the third rail, about three-fourths of the cars being motors. The cars are steel framed and the wood is treated to make them as near fire-proof as possible. They seat 52 people and are arranged like the ordinary elevated car, having standing room for twice as many more. The trains will probably be made up of about eight cars each. The company has about 600 cars at present.

The schedules are quite fast and while they were not maintained at first, both the machinery and the men being new, it is expected that this difficulty will speedily be overcome. Express trains run from City Hall to Grand Central Station in seven or eight minutes and between City Hall and 145th street in from 30 to 35 minutes. They make 35 to 45 miles per hour between stations.

The movement of trains is handled by about 18 dispatchers and assistants. Their duties do not exactly correspond with dispatchers on steam roads but are rather that of train master or yard master. They supervise the making up and

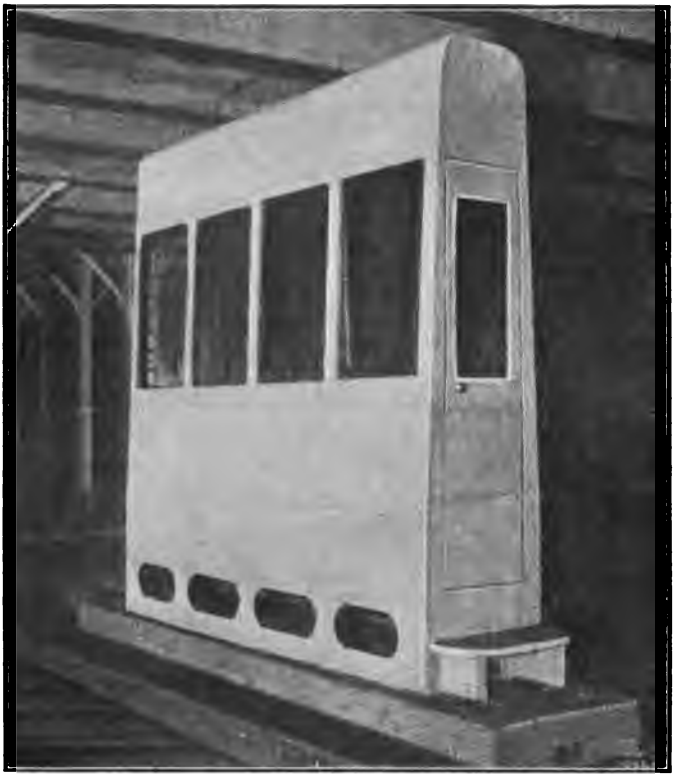

Fig. 3. INTERLOCKING CABIN

(From Railroad Gazette)

starting of trains and have charge of the men who run them. Trains are governed entirely by signals while on the road and the system is very complete.

The Signal System is the Westinghouse electro-pneumatic, installed by the Union Switch and Signal Company, and is as near complete as human genius can make it. It is automatic, controlled entirely by the passage of the trains. It is said that the work of installation involved more difficulties than anything heretofore undertaken in that line and it is the largest in point of apparatus and machinery. The conditions were peculiar, being under ground, and the space for instruments and machinery very limited. Fig. 3 shows an interlocking cabin, the machinery in which is condensed beyond all ordinary practice. It is only 30 inches wide. The electric current must of necessity be very heavy and much of the apparatus was invented and designed for this especial purpose.

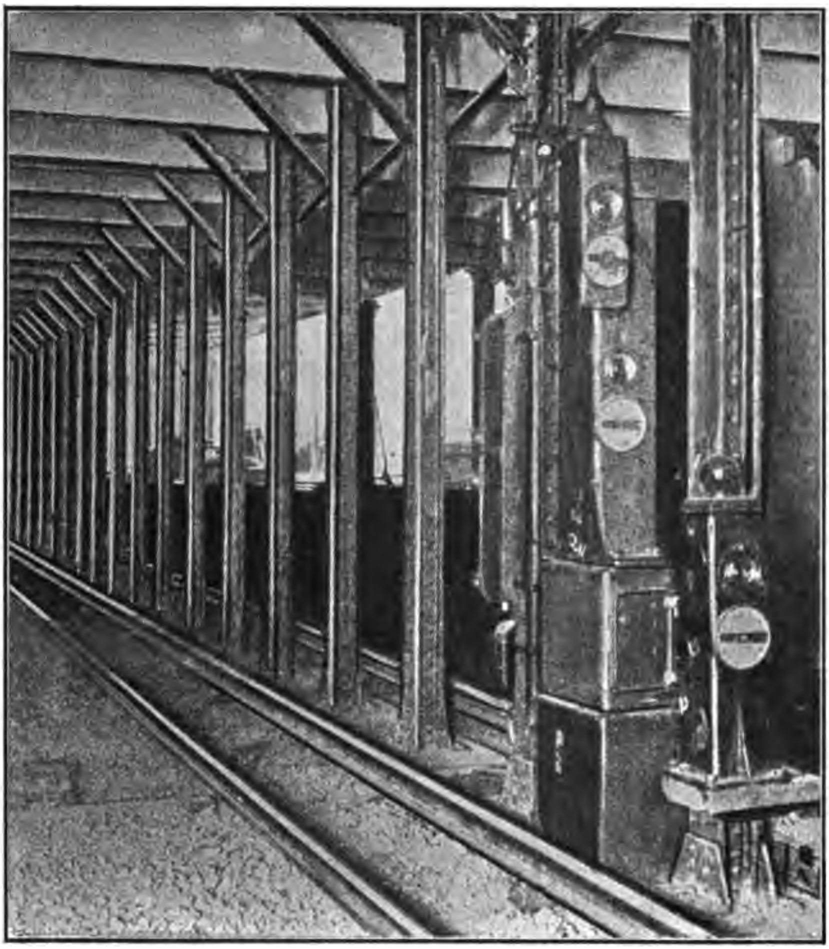

Fig. 4. BLOCK SIGNAL AND DWARF SIGNAL WITH AUTOMATIC STOP

(From Railroad Gazette)

One of the signals for the covered portion of the line is shown in Fig. 4. Owing to the darkness the indications are by lights at all times. This form of signal was designed for the purpose, being unlike any others in use. The working parts are inclosed in an iron case 9 feet 9 inches high and about 10 inches square. There are two signals, a home above and a distant below, in each case, and the indications are made by slides of colored glass that move up and down actuated by a pneumatic cylinder within the case. In addition to the regular lights there is an illuminated disc in which is shown a small semaphore arm which gives a position indication of the signal. It is directly under the signal with which it corresponds. Dwarf signals are used in the interlocking plants and are of the same general design as the block signals except that there is but one signal in each case and it is only 3 feet 4 inches high. (Fig. 4.) These also have an indicator showing the signal by position. They are to indicate the position of switches and do not refer to the system of blocking. On portions of the road that are in the open air regular semaphores are used.

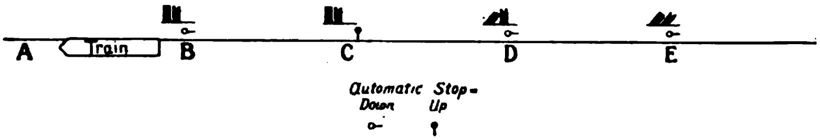

Fig. 5. Automatic Block Signals, New York Subway—Double Overlap with Automatic Stops.

The length of the blocks was a matter of great importance in preparing the plans and the basis on which they were determined was the distance in which a train could be stopped, provision being made for speeds up to 50 miles per hour. An exhaustive series of tests was made to ascertain what distance would be required to make the stop and the blocks were arranged accordingly. As there are numerous grades and curves this distance varies in different localities. The shortest distance between signals is about 820 feet.

The Double Overlap.—In ordinary automatic signal systems there is usually employed the "overlap," the principle of which is that when a train passes a home signal it does not clear the next signal in the rear (the one which has been protecting it) until it has passed the first named signal a distance of a few hundred feet, so that for this short distance it has the protection of two signals in the rear, a block apart. In the Subway there is instituted what is known as the "double overlap" which gives twice the protection of the ordinary method. It is illustrated in Fig. 5.

Suppose the train has just passed signal B. The home and distant signals at both B and C stand horizontal until the train passes the signal at A, thus affording positive protection for at least one full block in the rear and a cautionary protection for another block in addition. Included in the signal system is the automatic stop, which has been previously described in the Magazine. It consists of a trip which rises above the rail under certain conditions and engages a rod or projection on the car if it attempts to pass over it, which brings the train to a stop. The purpose of the double overlap is to keep the leading train at least one block ahead of the automatic stop, so that if the signal should be disregarded the current would be shut off and the air applied automatically, bringing the train to a stop before it reached the next signal and before it could reach the preceding train. This safety feature was anticipated in determining the lengths of the blocks.

Again referring to Fig. 5, when the leading train is in the position indicated a following train would find a clear home and distant signal at E, a clear home signal and a cautionary distant signal at D, and both home and distant against it at C. If it disregards all of these it will encounter the automatic stop at C which will bring it to a stop before reaching B. The signaling was planned to permit the running of an express train every two minutes and a local train every minute. Fig. 5, of course, represents only one track. The same applies to all tracks so signaled.

Each trainman is provided with a key with which he can unlock and remove the automatic stop if it should become disarranged and stand against the train wrongly. It is necessary, however, for him to hold it down while the train passes so that to unlock it would not diminish its value as a safeguard.

The signal system is on the "normal clear" principle, that is, the signals indicate "proceed" when no trains are using the tracks. Color indications are red, green and yellow for stop, proceed and caution, respectively. The signals are lighted by electricity and the circuits for this purpose are independent of the power for the trains and also of the circuits which control the interlocking and other electrical appliances. There are two lamps in each signal and they are independent of each other so that if one fails the other will remain.

On the lines now in operation there are 23 interlocking plants with a total of 383 levers, the number in each cabin ranging from 4 to 56. There are 227 interlocking switches, 354 home signals, 187 distant signals, 150 dwarf signals and 224 automatic stops.

Various Safety Appliances.—The operation of the Subway involves an immense network of electrical appliances. The power for the cars is electric, also the control of the signals. (The power for moving the signals is pneumatic.) There is a complete telephone system between all the stations, the lighting for everything, including signal lamps, is electric, and this is on a separate circuit from the power, so that if one is deranged it will not interfere with the other. In each station there is a city fire alarm box, also what is known as an "emergency button" which may be used in case of an accident and shuts off the power for the trains as well as setting all the signals at danger that are in the vicinity of that station. These emergency buttons are also placed at frequent intervals throughout the entire road and can be reached in a few minutes by any person or any train. The fire alarm and emergency alarm are connected with gongs in the general superintendent's office, the dispatchers' office, all the power houses and sub-stations. On the emergency alarm being given the power in the third rail is shut off to prevent injury to persons who might be walking about the tracks.

It is said that the equipment of the Subway includes a greater number of safety devices than any line yet constructed. During the month of February, which was very severe in point of weather conditions, there were 323,000 signal movements to one failure and in every case of failure the signals stood at danger and not at clear. This seems a remarkable record and speaks well for the efficiency of automatic block signaling. With the double overlap, the duplicate lamps in the signals, the duplicate signals showing both color and position, the automatic stops and the fire and emergency alarms it would seem that passengers in the Subway were surrounded by safeguards that would make accident by collision well nigh impossible.

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Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

262. Changing Length of Eccentric Rod.—"What effect would be produced upon the lap and lead by changing the length of eccentric rod?"—*W. S. B.*

Answer.—None. As lap is the amount of valve that extends over the outside edges of the steam ports when the valve is in the center of its seat, changing the length of the eccentric rods would not affect the lap. Lead is the amount of opening of the steam port when the piston is at the beginning of its stroke. An engine is given lap by advancing the eccentric toward the pin, and changing the length of the eccentric rod would not change the lead. Changing the length of the eccentric rods would only cause the valve to travel a greater or less distance on either side of a line drawn through the center of the valve and the center of its seat.

263. Valve Motion for Outside and Inside Admission Valves.—"What is the difference in valve motion for outside and inside admission valves?"—*W. S. B.*

Answer.—No difference in the valve gear, only in the position of the eccentrics in relation to main pin. An engine with an indirect rocker (one with a valve arm above the rocker box and the link arm below the rocker box) and outside admission, the eccentrics are set at right angles to the pin and advance towards the pin the amount of lap and lead. Now, if you change the cylinders on this engine and use an inside admission valve you would only need to change the position of the eccentrics. You would set the eccentric at right angles to the pin, and instead of advancing them towards the pin the amount of lap and lead you would advance them away from the pin that amount. In case it is desired to employ a direct rocker (one with the valve arm and the link arm both below the rocker box) then the eccentric would be at right angles to the pin and advance the amount of lap and lead towards the pin in the same position as they were for outside admission valve with an indirect rocker.

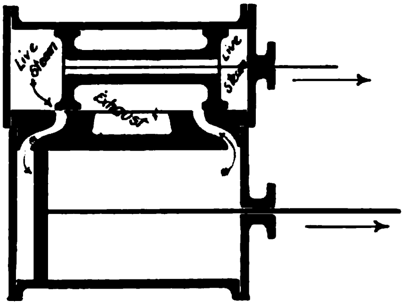
264. Direct Motion Valve Gear.—"What is direct motion valve gear?"—*W. S. B.*

Answer.—Usually termed in locomotive practice, direct motion when the valve rod moves in the same direction as the eccentric rod. When the valve rod moves in the opposite direction to that of the eccentric rod it is indirect valve motion.

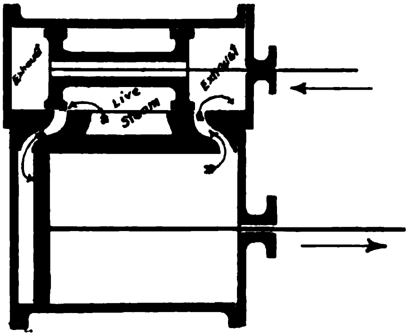
265. Position of Eccentric With Direct and Indirect Valve Gear.—"Why do eccentrics occupy the position that they do with either direct or indirect valve gear?"—*W. S. B.*

Answer.—To admit and exhaust steam to and from the cylinders at the proper time and exert a pressure on the piston which is transmitted to the pin, causing it to give a rotative force on the wheel when the crank pin is above or below the center.

266. Relative Motion of Main Piston and Valve for Inside and Outside Admission Valve. "What is relative motion of main piston and valve for inside admission valve and outside admission valve?"—*W. S. B.*



Outside Admission Valve



Inside Admission Valve

Answer.—The answer to this question is herewith illustrated. The arrows indicate the motion of valve and piston in each case. Note that with the outside admission the valve moves in the same direction as the piston while opening the port for admission, and with the inside admission the valve moves in the opposite direction to the piston while opening the port for admission.

267. Balance Slide Valve.—"What is a balance slide valve, how is it balanced and why?"—*W. S. B.*

Answer.—A balance slide valve is a valve provided with strips or rings that surround a portion of the area of the back of the valve to relieve it of pressure, and these strips or rings form a steam tight joint between the part of the valve and the underside of the steam-chest cover. Note the plain "D" slide valve in sketch, Fig. 1. You have steam-chest pressure forcing the valve to its seat at all times when the throttle is open, and the exhaust steam and the steam pressure in the cylinder when the valve has just closed the steam port or cut-off the steam forcing it up from its seat. The area of the valve being the same on both top and bottom of the valve and the steam-chest pressure being the greater, friction is produced that absorbs power. To reduce the friction and lessen the power required to move the valve back and forth over its seat for the admission and exhaust of the steam to and from the cylinder, strips or rings are employed to keep the pressure from a certain portion of the back of the valve, as shown in sketch, Fig. 2, and a hole or holes are made in the back of the valve to allow any leakage of steam past the strips or rings to escape to the exhaust cavity, thus relieving this part of the valve from steam-chest pressure. The valves are balanced to increase the efficiency of the engine, reduce the cost of lubrication, and to make the engine easy to handle.

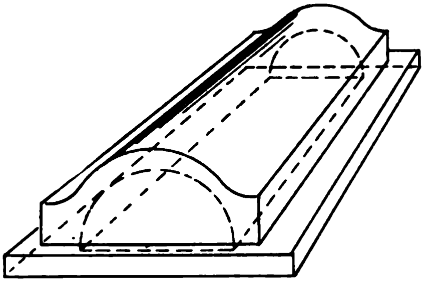


Fig. 1. Plain "D" Slide Valve

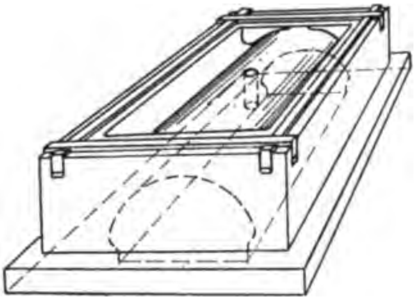


Fig. 2. Balance Valve.

268. Kerosene for Cleaning Cylinders and Valves.—"Is it good to give an engine kerosene into the relief valves when drifting, for cleaning out cylinders and valves?"—*G. E. N.*

Answer.—If balance strips are stuck in the valve, or a packing ring gummed up in the piston, a slushing of kerosene oil will sometimes loosen them up, but it should be immediately followed by a liberal allowance of valve oil. A solution of lye would do equally as well as kerosene for this purpose, but would not recommend either. Good dry steam and valve oil are the best things to put in a cylinder or steam chest. If graphite is used, feed it in with the oil or water but do not use a low grade of oil in your steam chests or cylinders, as it burns and causes trouble and does not lubricate at high temperature. Keeping the throttle cracked sufficiently open to hold the relief valve shut when drifting and the use of dry steam and valve oil will obviate the necessity of using anything else in the steam chests and cylinders.

269. Piston Valve.—What is a piston valve?"—*W. S. B.*

Answer.—A piston valve is a valve composed of two pistons connected together, properly fitted with rings that form the edge of the valve for the opening and closing of the steam and exhaust ports.

270. Lifting and Nonlifting Injectors.—"What is the difference between a lifting and nonlifting injector?"—*C. B. S.*

Answer.—A lifting injector is placed as high or higher than the level of the water in the tender and raises the water to the injector, then forces it into the boiler. This class of injector is most commonly used on locomotives. The nonlifting injector must be placed below the level of the bottom of the water space in the tender so that water will flow to it by its own weight, after which the injector will force the water into the boiler.

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271. Leak Between Injector and Tank.—"Will an injector work with a leak between the injector and tank? Why? Will it prime?"—*C. B. S.*

Answer.—A nonlifting injector will work if there is a leak between the injector and tender, providing there is a sufficient supply of water flowing into the injector feed pipe. A nonlifting injector will not work if there is very much of a leak, as the air enters the pipe and prevents the injector from forming the necessary vacuum required to raise the water to the injector. It will not prime. Even if it does prime the injector will not work to its full capacity. Close the overflow and put on the heater. This will show where the leaks exist, and have them made tight if possible.

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272. Exhaust Strongest from One Side of Stack.—"What does it indicate when the exhaust issues strongest from one side of the stack?"—*C. B. S.*

Answer.—If the engine has been in service and the exhaust has filled it evenly, the indications are that the petticoat pipe is loose or tipped, directing the exhaust to one side of the stack. If the engine has recently passed through the shops it may be that either the petticoat pipe, exhaust pipe, nozzle tip, or stack are not in line with each other.

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273. Leaky Steam Pipe Joint Inside of Smokebox.—"What is the effect of leaky steam pipe joint inside of smokebox?"—*C. B. S.*

Answer.—The exhaust steam passing up through the stack expels the smoke and gases from the front end, producing a partial vacuum in the front end. Air to supply this vacuum must be taken through the ashpan, grates, hollow staybolts, combustion tubes, and firedoor. If the steam-pipe joints leak, or the joint under the exhaust pipe, or the steam from the blower pipe, exhaust pipe from the air pump or steam turbine for electric lighting are not directed up through the stack, but strike the flare of the petticoat pipe, or are tipped so that the leak or steam will destroy the partial vacuum, the engine will not steam and the fire will not burn brightly but will burn with a smoky dull red color.

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274. Leaky Check and Injector Throttle Valves.—"Will injector prime if checks leak bad or are stuck up, or if throttle valve leaks bad?"—*C. B. S.*

Answer.—If the check leaks bad and there is no line check in the branch pipe, the steam and hot water will flow back into the injector and prevent a vacuum being formed to raise the water to the injector. If the throttle leaks bad you will have the same trouble. Sometimes injectors have been started when throttle or checks were leaking, by throwing cold water on the check or injectors, thus condensing the steam so that they would prime and bring water up to the injector.

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275. Leaky Primer Valves.—"Will the injector prime if the primer valves leak? Will this prevent its working?"—*C. B. S.*

Answer.—No. The primer valve leaking will only cause the injector to prime when not wanted, but would not interfere with the working of the injector when steam was turned on to force water into the boiler. To prevent waste of water close water valve or tank valve.

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276. Operation of Sight-Feed Lubricator.—"Describe the manner in which a sight-feed lubricator operates?"—*C. B. S.*

Answer.—Steam is condensed into water and flows down into the reservoir. As the water is heavier than the oil, the oil rises and flows into the pipe leading to the feed valves of the lubricator. The water in the condensing chamber being higher than the oil in the oil cup gives the oil below the condensing chamber the pressure equal to the height of the water above the cup. Steam pressure is also on top of the water tending to force the oil out of the feed valve nipples when feeds are open. Steam also passes through the equalizing tubes to the chambers above the sight-feed glasses and is held back by the chokers, thus equalizing the pressure on the top of the water in the sight feed glass and the oil in the cup. Therefore, when the feed valves are opened the pressure of the height of the water in the condenser and the buoyancy of the oil is all that forces the drop of oil up through the sight-feed glass. When the oil reaches the surface of the water in the chamber above the sight-feed glass it is opposite the hole in the choke plug and it is carried into the oil pipe leading to the steam chest by the steam that flows through the choke plug. This is why the oil will feed so fast when the hole in the choke plug is worn too large or the equalizing pipe is stopped up.

277. Effect of Draft on Working of Lubricator.—"Does the draft from an open cab window affect the working of the lubricator? Why?"—*C. B. S.*

Answer.—The cold air striking the lubricator will cool it and chill the oil, which retards its flow. If the feed valves are open to feed the proper number of drops, then closing the window allowing the lubricator to get warm, the oil will feed faster, thus causing an irregularity of feed.

278. Irregularity of Feed of Lubricator.—"What else might cause irregularity of feed?"—*C. B. S.*

Answer.—Dirt in the lubricator, choke plugs worn too large, equalizing tubes stopped up, or insufficient area of steam pipe to supply steam to the lubricator. Sometimes this occurs when pipes are tapped to a fountain that is too small in its main opening to supply the boiler attachments, such as injectors, air pumps, blower, smoke consumers, etc.

279. Cleaning Chokers of Lubricator.—"How would you clean out chokers?"—*C. B. S.*

Answer.—Disconnect the oil pipe and run a small wire through them, or by draining the lubricator and opening feed valves and drain cock and then opening the throttle the steam will flow from the steam chest to the lubricator and may blow the obstruction into the sight feed glass. It may be necessary to remove the choker and clean it out, but care should be exercised not to enlarge the hole in it.

280. Cleaning Sight-Feeds of Lubricator.—"If sight feeds get stopped up how would you clean them out?"—*C. B. S.*

Answer.—You can clean the sight feeds out by removing the regulating valve and blowing steam through the nozzle or nipple, or by running a fine wire or broomstraw through it, or by draining the oil out of the cup, closing the water valve that regulates the opening between the condenser and the oil cup. Leave the drain cock at the bottom of the oil cup open. Open feed valves and steam valve and the steam will flow down through the equalizing tubes into the sight feed glasses, forcing the water and obstructions into the oil cup and out at the drain cock. Close the drain cock, shut the feed valves until the glasses become filled with water and the feed will work all right. Sometimes a small piece of soap put into the lubricator with the oil and then blowing the lubricator out in the above manner will improve its working.

281. Closing Lubricator When Waiting on Siding.—"Which is the better practice, to close the feed valves or water valve on a lubricator when waiting on a siding?"—*C. B. S.*

Answer.—The feed valves always. The water valve may not be tight. It is always best to leave the water valve open except when filling the lubricator.

282. Filling Lubricator With Coal Oil.—"Will any bad results ensue from filling a lubricator full with cold oil?"—*C. B. S.*

Answer.—The answer to this question is usually "Yes." That when the oil is heated it expands and may cause the lubricator to bulge or burst. This is not correct, as the lubricators are all tested before they leave the factory under a pressure of 500 or 600 pounds, and there is also a partition extending down from the top of the cup that will trap a small amount of air, thus providing an expansion chamber for the oil when it becomes heated. You see many lubricators filled until they overflow and no bad results come from it. Therefore, would say that no bad results would come from filling the cup too full.

283. Increasing Power of an Engine.—"Is there any possible way of getting more power out of an engine than that at which she is rated?"—*J. A. W.*

Answer.—Increase the pressure or increase the number of revolutions per minute, or allow a longer cut-off. Any and all of the above will increase the horsepower of the engine.

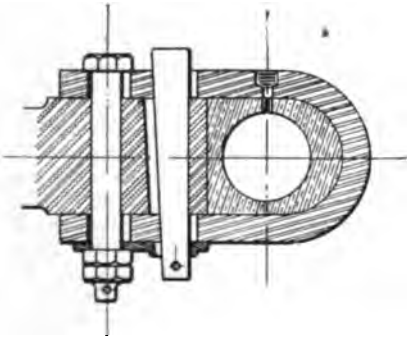
284. Cylinder Clearance and Blocking.—"With the kind of a guide yoke which bolts on top of the top guide and under the lower guide, there is nothing at the back end to prevent the piston coming so far back as to allow the packing rings to get caught in the counterbore. How would you block to prevent the piston coming too far back?"—*B. L. S.*

Answer.—An engine that would allow the packing rings to get caught in the counterbore of the cylinder would have excessive cylinder clearance. All the room there is between the piston and the cylinder head when the piston is at the end of the stroke is called cylinder clearance. In blocking the crosshead at either end of the stroke you would have the thickness of the piston or follower up the groove for the packing ring, and then have almost the width of the ring additional to move back or ahead before the ring would get caught in the counterbore, which rarely, if ever, occurs. Even if it should, no damage would result, as it would be discovered when repairs were being made. So block her clear back and get ready to go in on one side.

285. Handling Heavy Main Rods in Breakdowns.—"It puzzles me how I could handle a main rod on our largest locomotives in case it was necessary to take one down on the road. In some breakdowns, such as broken guides or crossheads, how would it be to let it down on the ground then pick it up and put it on the pilot. It would be so heavy that a man could not lift it."—*B. L. S.*

Answer.—Get the train crew to help you handle the rod; call on the section men if you need them. There is always a way to bring in the broken parts, and they are necessary sometimes in order to get the engine in service. You would tie up the engine if you brought her in without the main rod; you can always get help.

286. Keying Up a Draw Strap.—"They say you have to loosen the strap bolts before you key up a draw strap. Please explain how I may know if it is the draw strap by looking at it, and if it is correct to loosen the bolt. Do they use drawstraps on the back end of the main rod, or just on the front end?"—*B. L. S.*



Draw Strap for Forward End of Main Rod

Answer.—A draw strap is used on the forward end of main rods on some classes of engines, and the key goes through the main rod and strap instead of being placed between the end of the rod and the brass. The bolt is a good slip fit in the rod, but the bolt-hole in the strap is slotted and you have to loosen the bolt before you can drive the key. With this arrangement in keying the front end of the rod it is shortened instead of lengthened. Observe the construction in sketch. Men have reported front end rod brasses filed when this kind of strap is used, because they were not familiar with it and did not loosen the bolt before trying to drive the key.

287. Clamping Valve, With Main Rod and Piston Working.—"When clamping a valve with one port slightly open to lubricate cylinder in case where the main rod is left up and piston allowed to move in the cylinder, would you advise taking out cylinder cock in opposite end from the end where port is left open, or in other words, would you advise both cylinder cocks taken out? I have seen instructions to take out cylinder cock in the end that the port is left open, but it seems to me that when the piston moves towards the open port it would go against atmospheric and steam pressure and the partial vacuum at the other end of the cylinder causing a great resistance. Wherever both cocks were removed the vacuum would be less. How much would you leave the port open, judging from the flow of steam from the cylinder cock. How much resistance would the piston work against, and is there any danger of cutting the cylinder. Would you feed oil any faster on the disabled side?"—*B. L. S.*

Answer.—Take out the cylinder cock at the end of the cylinder that you left the port open. The port opening need not be more than the thickness of a piece of tin. Judging from the steam escaping, move the valve until you get steam to show at cylinder cock so it can be seen two or three feet away from the cock. All you want is just enough steam to keep the cylinder from cutting and to carry the oil into the cylinder. To do this, feed the oil a little faster on the disabled side than on the working side and when running shut off; oil may be admitted through the oil pipe at lubricator or through the air inlet valve on steam chest. It is not necessary to take out the other cylinder cock. As to the resistance and vacuum on each side of the piston, it would all depend on the speed and condition of the cylinder packing rings. There is no danger of cutting cylinder if engine is properly handled.

However, you will be responsible for consequential damage, but if you follow instructions you will be safe in handling the engine in the above manner.

288. Keying Siderods on Six-Wheel Connected Engine.—"Keying up siderods on a six-wheel connected engine and two keys for front and back pin, would you drive both keys for each pin or just one, and if so which one would you drive?"—*B. L. S.*

Answer.—Before keying siderods see that the wedges are properly set up. Then place the engine on a straight track on dead center on the side to be keyed. Key main pin or middle connection brass first. If necessary to slack off all other keys in the siderods do so. When you get the main pin on middle connection brasses keyed, then key the back end brasses first, then the front end brasses last. Use both keys to get rods the proper length, then try rods on the other dead center. If you can move the rods easily on both centers you will have them the right length and properly keyed. Tighten up set-screws and you will have no further trouble.

289. Indirect Motion Engine.—"What is an indirect motion engine?"—*J. A. W.*

Answer.—A direct motion engine is a motion designed so that the valve rod moves in directly the same direction as the eccentric rod, and indirect motion is a motion where the valve rod moves in the directly opposite direction from that of the eccentric rod.

290. Lining Up a Stationary Engine.—"How would you proceed to line up a stationary engine?"—*J. A. W.*

Answer.—Remove the cylinder head, piston and rod, stuffing-box gland, crosshead and connecting rod, and turn the crank to the lower quarter. First place a level on the shaft and level it, if need be, by raising or lowering the outboard bearing, as the case may require. Fasten one end of a stout cord or, better still, a fine wire to some object beyond the crank and pass the other end of wire through the stuffing-box and cylinder and fasten to some object as before. With a pair of inside calipers take the distance between the walls of cylinder and the wire at each end of the cylinder and also at one or more intermediate points, for the purpose of bringing the wire into the exact center of the cylinder. When the wire occupies a perfectly central position throughout the length of the cylinder, turn the crank around until the crank pin just touches the under side of the wire. When the pin occupies this position the distance from the wire to the inside of the shoulder or collar on pin should be the same on both sides of the wire. If it is not, equalize the distance by moving the outboard bearing slightly, as the case may require. Now turn crank around and bring pin up to the wire at the opposite center; again measure the distance from the wire to the inside of the collar or shoulder as before, which should be the same as at opposite end. If engine is fitted with locomotive guide bars, or a single bar-guide, the distance from the wire to the guide should be taken with the calipers at each end of the stroke, equalizing the distance of bar from wire by slightly moving the guides as the case may require. Should shaft be much out of line, requiring considerable movement of outboard bearing, it would be advisable to remove the quarter boxes and scrape them to an even bearing, otherwise the shaft in its new position will be liable to bear very heavily at the ends of the quarter boxes only and cause excessive heating. Replace all the parts removed and make the necessary adjustments with the crank on the dead center. Turn engine to opposite dead center and make sure that the crank passes the dead center easily.

291. Function of Ball Valve With Michigan Lubricator.—"What is the function of the ball valve in the oil pipe next to the steam chest on a Michigan lubricator, and where is its station when the throttle is open?"—*C. W.*

Answer.—The Michigan lubricator is equipped with a steam-chest plug and ball valve. If the ball is perfectly round you will notice that near the seat for the ball there is a small hole the size of the ordinary choke plug. The position of the ball when the throttle is closed is on its seat, then the small hole serves as a choker and answers the same purpose as it did in the lubricator. Just as soon as the throttle is opened, and the steam chest pressure is greater than the oil pipe pressure, the ball leaves its seat and allows the full size opening of the oil pipe or plug for communication between the steam chest and lubricator, *i. e.*, removes the choke plug feature when the steam chest pressure is greatest and restores the choker when the lubricator pressure is the greater (throttle closed).

On the more recent lubricators of this type the small hole near the seat of the ball is omitted and the ball is grooved to provide a small opening for a choke when the ball is on its seat.

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292. Blocking Steam Ports of Locomotive Having Piston Valves.—"Is there any way of blocking the steam ports of a locomotive equipped with piston valves if one of the valves is broken?"—*C. W.*

Answer.—If the piston valve is broken between the pistons you may be able to remove the head from the piston valve chamber and block the broken valve so that steam will not escape to the exhaust cavity, if you can do so, and secure the parts and put on the head. Should the valve break in such a way that you could not use the parts in the manner described, take out all the pieces and take a piece of post or telegraph pole, cut it the proper length, get it to fit as best you can in the valve chamber, put on the head to hold it in place, and come in on one side.

The Westinghouse Air Brake.

Answers by F. B. Farmer.

229. Effect of Retaining Valve on Braking Power.—"Suppose we have a train of 15 air brake cars, all brakes with 8-inch piston travel and otherwise in good working order. If a 20-pound train pipe reduction is made, retaining valves are turned up on 5 of the cars, triple valves released and brakes fully recharged to 70 pounds, we then have 15 pounds retained in each brake cylinder of the 5 cars. Now, if another 20-pound train pipe reduction is made how much more braking power will we have on the cars with the retaining valves turned up than on the other cars?"—*L. B. L.*

Answer.—Under the conditions stated, there would be about 50 pounds in each cylinder of the cars without the retaining valves in use and about 56 pounds in each of the others. It may seem strange that the 50 pounds obtained without the retaining valve is not increased the exact number of pounds it retains, yet it is a fact that becomes clear with an understanding of the rule governing the expansion of gases.

Even without turning up a retaining valve, if when the brakes were first applied, one piston rod was clamped so its piston could not move back, all triple valves were released, brakes fully recharged and then another 20 pounds reduction were made, the cylinder with the piston held out would have about 3 pounds more pressure than the others. This would be due to the atmospheric pressure that remained in the cylinder.

The main points to bear in mind in regard to the use of retaining valves are that the small size of the retaining position exhaust port causes a much slower fall in brake cylinder pressure than does the large port, when the triple is in release and charging position; and that by quickly recharging and reapplying it is often practicable to make the standard valve hold more than 15 pounds. But if not, owing to the time required for recharging and the leaks in the retaining valve pipe, it is desirable to reapply as quickly as possible so as to stop all farther discharge, thus saving air and increasing the air brake safety of the train.

The Westinghouse Air Brake Co. is now making a special valve for very severe service, as where large capacity cars, when loaded, have to be held down very steep grades. In the usual retaining position (handle horizontal) it holds 25 pounds, but in a position midway between this and vertical, where it is cut out, it holds 50 pounds.

Even the standard valve is much more efficient where used with 10-inch brake cylinder freight brake, now being applied quite generally with large capacity cars, owing to the slower fall in brake cylinder pressure while recharging. This is owing to the larger volume to be discharged through the same sized port as used with the 8-inch cylinder freight brake.

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230. Undesired Quick Action.—"We coupled 33 cars of air in the yard and when we pulled out to put cabin (caboose) on, the brakes went on in emergency from a service application. When out about 18 miles on the division, they applied in emergency as if an angle cock had been opened and closed. We stopped at water station nicely with a service application. No more trouble was experienced until about 40 miles over the division when they applied again and released; then applied three times within three miles, while moving and twice while standing when we were hunting for the trouble.

"We closed the angle cock behind the tank to test its triple valve, and while so doing the brakes went on the train. Then we recharged the train line, cut between the 10th and 11th cars and could not get emergency on either section with light reductions.

"We coupled up, moved about three train lengths farther and, when I pulled the brake valve over the shoulder to make a service application, the brakes applied in emergency again. The conductor and rear brakeman were standing on rear end of cars and claimed they each found a "kicker" and cut them out. I reduced train-line pressure from 73 to 60 pounds and we had no more trouble.

"The pump did not work fast to keep up the pressure and the train-line hand showed no variation in pressure except on application; so I think we can not blame the feed valve or a leak in the train line. I think it was in a triple valve and would like to hear from some of our friends regarding this case."—*Mc. T. H.*

Answer.—You are, undoubtedly, right in the presumption that it was a defective triple valve that was causing the trouble and it was evidently one of the two cut out by the train men. But that the brakes could have applied without a train-pipe reduction, either due to unsupplied leakage or a discharge made by the brake valve or an angle cock, is impossible.

When charged brakes have their triple valves in release position the main piston in at least one valve must move the slide valve to application position before any application is possible. Gravity can not do this and the friction of the parts must be overcome for the air pressures to accomplish it. The only way is by the train-pipe pressure being reduced below that in the auxiliary reservoirs, which means a train-pipe reduction made in some manner.

Usually such a defective valve can be located by first making a lesser train-pipe reduction than has been observed to cause quick action, usually 5 or 6 pounds, next locating any brakes that have not applied, then making a farther reduction and, while watching the unapplied brakes, noting what one finally applies quick action.

That some brakes fail to apply with a light reduction, especiallv with a long train, is not sufficient indication of their being defective, which is why the farther test is necessary to locate the faulty one. Sometimes it is necessary to test only as many of the head brakes as can be watched by the crew, adding as many more from time to time until the faulty one is found and cut out.

Many cases of reported or supposed undesired quick action are not such at all. Some presumed or stated to have caused a severe shock or break in two are the result of loads ahead and empties at the rear, coupled with a farther reduction at low speed; others from release at low speed; a few from applications made when the track conditions, humps, sags, or curves, aid in causing the slack to run in or out suddenly; others from the use of emergency position, the rear angle cock or the conductor's valve; and some *reported* cases from injudicious use of the throttle. Where certain men occasionally have break in twos at water stations, coal chutes or where there are other incentives to release at low speed, yet not elsewhere, it implies a degree of discernment as to location that is hard to believe of air brakes.

Quick action taking place from a service reduction is immediately followed by the train-pipe exhaust stopping abruptly and earlier than it should for the reduction made. This is due to the train-pipe reduction made by the triple valves applying quick action.

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The New York Air Brake.

Answers by J. P. Kelly.

145. Driver Brake Failed to Operate With Light Service Reduction.—"What is the cause of the driver brakes not operating when a small application is drawn off, and will apply when heavy reductions are made, New York air all through?"—*C. J. W.*

Answer.—In all likelihood the driver brake-cylinder packing leathers are in bad condition and allow the slowly-entering air, when light service applications are made, to blow through, or past, them and escape to the atmosphere without pushing out the piston. When heavy brake-pipe reductions are made, the auxiliary air flows more rapidly into the brake cylinders, "sets out" the flange of the cylinder packing leather against the walls of the cylinder firmly and quickly, thus preventing leakage and causing the brakes to apply. Wherever there is a failure of the driver brakes to apply while a light service reduction in brake-pipe pressure is being made, the trouble, assuming that the auxiliary is properly charged, will usually be found due to dried-out leaky packing leathers. Leathers in this condition are not very pliable, and do not "set out" against the walls unless the air is admitted to the cylinders quickly and forcibly; hence the failure to apply in light service, while in heavy service they do apply. The peculiar action you note when the driver brake leathers are bad is more noticeable on a long train than on a short one.

Railway Club Proceedings

*Smoke Prevention.**

The recent efforts of St. Paul's health commissioner to force the railroads coming into St. Paul to abate the black smoke nuisance in the depot suggests the advisability of devising some means for overcoming the difficulty, and it is the purpose of this paper to make a few suggestions, and to promote a general discussion of the subject.

There is no doubt but what a great deal of unnecessary smoke is being poured out of the stacks in the depot sheds. Greater care on the part of firemen in preparing their fires and more deliberation on the part of engineers in getting trains out of the station would undoubtedly means less smoke and gas, but not even the combined efforts of both firemen and engineers can entirely do away with black smoke. The violent exhaust of a locomotive when starting her train makes it imperative for the fireman to prepare his fire to meet the emergency, for, if he fires too light, the heavy exhaust will tear his fire to pieces, and, as a result, his engine will be found lagging just at the time when she needs all the steam he can give her, and the flues must also pay the penalty of an injured fire. As a consequence, the fireman is between the devil and the deep sea; if he fires too heavy he is up against Dr. Ohage—if he fires too light he is up against a heavy grade with his fire ruined, no steam and leaking flues.

The engineer is in much the same boat, for if he picks up his train too rapidly, and in doing so leaves a trail of black smoke behind him, he knows that Dr. Ohage will be at the general office with his number and a polite request for his name, while if he is too deliberate in getting out of the station, he sees before him the necessity of making up the time lost by so doing, and making it up when his engine is making her 280 revolutions per minute, when he knows that gaining time means added risks to the lives of the patrons of the road and to the property of his company.

The use of coke for firing while in the depot has been suggested, but there are many reasons why this is impracticable.

The only practical solution of the difficulty seems to lie in the adoption by railroads of some device that will effectively mild the exhaust of an engine when starting her train, so that it will be possible to carry a lighter fire when the lever is in the corner without running the risk of tearing or injuring the fire so badly that steam will be lacking when needed.

Several of the roads, among them the Great Western, have been for some time experimenting with a device that, among other things, seems capable of accomplishing this desired effect. The device is very simple, and, by an automatic attachment to the reverse lever, relieves the exhaust directly at the valve, and allows a percentage of it to escape to the atmosphere without passing through the nozzle. The violence of the exhaust at the nozzle is thus milded when the engine is picking up her train with the lever in the corner and a light fire can be carried without any danger of its being injured.

With this device the fireman loads his firebox and burns off all smoke and gases before pulling into the station, and it is not necessary for him to fire again until after he has left the depot, as there is no heavy exhaust to tear his fire when the lever is put in the corner and the throttle opened.

From the tests that have already been made with the device it would seem that this is the only feasible solution of the smoke question. No other scheme that has come to my notice so thoroughly solves the question, nor solves it with so little expense to the railroads, as it is claimed for the device that it will more than save its cost inside of twelve months by reducing the fuel consumption of the engine.

This fuel question has come to be one of the most serious questions that the railroads have to answer.

When you stop to consider that 7 per cent. of the entire operative expenses of the railway systems of the United States is annually put into locomotive fireboxes, it is easy to see how much the earning capacity of the system depends upon the efficiency of the engineer and fireman.

Eternal vigilance is the price of economy in fuel, and the fireman who saves a scoop of coal for his company, whenever such a saving is possible, is worth a bonus of many dollars a year to his employers. But not all the watchfulness and instruction in the world can cause every man to do his duty, and every year hundreds of thousands of unnecessary dollars are shoveled into locomotive fireboxes by men who don't know or don't care.

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*Paper by John Lynch, T. E., C. G. W. Ry.

One cause for wastefulness may undoubtedly be found in the fact that the modern engine, with its immense coal capacity, taxes the fireman so severely that he really has little time to use his judgment in the matter of coal economy. He knows that he must hold his fire at any cost, and, in his efforts to do so when his engine is working with the lever in the corner and the exhaust is severe, he throws many unnecessary scoops of coal into the firebox.

The necessity of preparing the fire to prevent a heavy exhaust from ruining it seems to be the main cause for actual waste in fuel, and it is reasonable to presume that a contrivance that will overcome this violent exhaust when the lever is in the corner will prevent this most flagrant and unnecessary waste in coal.

Tests of the device, of which I have already spoken in connection with the smoke nuisance, have convinced me that it will do away with this tearing exhaust without at all affecting the steaming capacity of the engine when she needs all the steam she can make. Experiments made for several months under my personal notice have demonstrated that it is possible to carry a light fire with the lever in the corner, starting trains or making a run for hills, and that the exhaust is so milded that the fire is not injured.

By uniforming the draft of the engine the work of the engineer is likewise uniformed and brought nearer to that level line of effort that makes economical firing possible. My experience with firemen leads me to believe that when you make it easy for a fireman to save coal, he will save it, and when you put a device on his engine that makes his work easier, he will not be slow in taking advantage of it. The confidence such a device would give a fireman in the ability of his engine to hold a light fire under heavy work will also work to the advantage of the company's coal bins.

The great difference in the records of engineers and firemen in the matter of coal consumption demonstrates the vast field for improvement in that line, and there is no doubt but what much is to be accomplished by careful instruction and constant efforts to bring the standard to a higher level, and to bring all the men near that standard; but as in all lines of work, there will be found all grades of workmen, so there will always be a wide difference in the coal records of engineers and firemen. Machinery has in every line been brought into play to bring the cost of production to a lower and more uniform level, and I believe that the railroads must look to some practical mechanical device to bring the cost of producing steam down to a more economical and uniform basis.

Much can still be accomplished by a system of education, but it is my belief that the real solution of the coal question will be found in some device that can be depended upon to do its work of saving regardless of the ability or lack of ability in the human agent who handles the coal.

VICE PRESIDENT EVANS: Mr. Lynch, have you anything to say in opening this subject?

MR. LYNCH: I was requested by the C. G. W. to see what could be done to prevent black smoke in pulling in and out of the Union depot. I rode on the large transfer engines in and out of the yard, and they had to be fired with the doors open, to prevent black smoke, and as a consequence they had to go to the roundhouse that night.

With the Union depot situated as it is, and with the fuel that we have to burn, it is an impossibility to get in and out of the yards without black smoke. The men that were prosecuted were men that were not making black smoke through any fault of their own; it was through an emergency.

With the device is speed that will do away with this to an extent, and it is the only device that I know of that will prevent black smoke in pulling in and out of the depot.

VICE PRESIDENT W. H. EVANS: Gentlemen of the Club: We have with us this evening Dr. Ohage, the St. Paul health commissioner, and I am sure that you will all be glad to hear from him on the subject.

Dr. Ohage made a short speech, outlining his general policy regarding the enforcement of the smoke ordinance in St. Paul. He advocated the use of coke or anthracite coal in engines operating in the city.

He also made the statement that, according to his belief, the railroads had very little interest in reducing the amount of black smoke, or were interested in the health of the people.

A number of photographs which had been taken at various times by Dr. Ohage and his assistants were passed around.

Mr. T. A. Foque: I would like to inquire if the C. G. W. Railway provided the device Mr. Lynch speaks of with the primary object of preventing black smoke in the St. Paul yards or was the prevention of black smoke something that was discovered after the device was applied.

Mr. Lynch: It was put on for the saving of fuel, and when you save fuel you dispense with black smoke. At the time it was put on we found that it dispensed with black smoke to a certain extent. It will not prevent black smoke at all times, but it will in starting out from the depots such as St. Paul.

Mr. T. A. Foque: I think the statement was made that the Great Western was the only road that had taken up the black smoke question with a view to its prevention, and also that the railroads have no interest in the health of the people, and I believe something should be said in defense of the railroads. I do not believe that anybody is narrow minded enough to believe that we have no interest in the public welfare, but leave that question aside altogether and consider what the railroads are operated for. As any other business, they are operated for a profit, and any one that has examined the fuel bills must know that there is no profit for a road in burning anthracite coal in this section. We also know that black smoke is a result of imperfect combustion, and the railroads are as much interested in preventing this as anybody.

For the railroads, St. Paul is most unfortunately located. There is no trouble getting into town, but the station is located at the foot of a very bad grade. In order to keep the station free from smoke and steam firemen are supposed to keep a low fire while standing there, and it is necessary for them, on starting out, to fire quite heavily. With some trains black smoke is sure to result, but the railroads would like to prevent it just as much as the St. Paul health department.

I am safe in saying that our engines are making more black smoke getting out of St. Paul than at any other point on the line, for we do not put up with it except as necessity demands. We have spent more time than Dr. Ohage ever did trying to overcome the trouble.

The fact that one road has taken up a new device is no reason why other roads should rush into it without knowing more about it.

The railroads would welcome an automatic stoker or any device that would result in the most economical firing, but such a device has not been brought out as yet.

I want to emphasize the fact that we are not here to make black smoke for St. Paul. We want to prevent it, if any one does, and if any one can tell us how to do it we will be more than glad to listen. On the other hand, I do not think the railroads should rush in and take up every little device that can be thrown on the market by some one that perhaps never had to do with locomotive operation.

Mr. Van Alstyne: I want to express myself as in sympathy with Dr. Ohage. There is no doubt that a great deal can be done by care on the part of the engine crew. On the other hand, as has been very clearly brought out, there are some very difficult places in getting out of St. Paul, and more or less smoke will be made, but, as Dr. Ohage says, it is not the intention to prosecute anybody for a reasonable amount of smoke; but the question is, what is a reasonable amount? During about five years in connection with the Great Western I know that we made a great many efforts to keep down smoke. We were constantly after the men about it.

I want to take exception to the remark that Dr. Ohage made regarding railroads not being interested in this matter. All of the general managers and presidents of railroads that I am intimately acquainted with in St. Paul are as much interested as anybody is.

In reference to the Whalen device, I have some knowledge of this, and, while it has possibilities, it is going to take time to say whether it will be practicable on a considerable number of engines. At the same time if we make every effort to keep down smoke without the Whalen device it will probably be all that Dr. Ohage will require.

As to the probability of using anthracite coal or coke, I do not know very much about either, but it is my understanding that in order to get the heat out of the coal a large grate and a large firebox are necessary, and we would have to change all of our engines and fireboxes. It would also increase the expense to a large extent to burn coke or anthracite coal as compared with Eastern roads. I have no figures, but know it would be considerable.

MR. F. B. FARMER (Westinghouse Air Brake Company): Mr. Van Alstyne's remarks remind me of some figures that I saw in the Railroad Gazette about a week ago, and bearing on this. The Long Island Railway in 1901 had a total revenue train mileage of 3,456,305. The fuel cost $403,173. In 1904 the total revenue mileage was 4,387,430, an increase of 27 per cent. The cost of fuel increased to $838,422, or 108 per cent. on account of burning anthracite coal, which was necessitated on account of the mileage inside of the city.

In 1902 the profit was $544,255, and in 1904 there was a deficit of $275,205, which was attributed to the increased cost of fuel.

I, too, am in sympathy with Dr. Ohage, but I am more interested in some of the large buildings. Our office is located on the top floor of a six-story building, and I have often thought that it would be interesting if we could see the black smoke from some of the engines, but on account of the smoke from some of the intervening buildings we will have to depend on Dr. Ohage's photographs for it. I would like to see smoke prevention come a little nearer home first.

MR. GEO. S. GOODWIN (G. N. Ry.): In regard to the suppression of black smoke in the city of St. Paul, it seems to me that there has been a marked improvement in the past two or three years, and I think that there can be a greater improvement by the engine crews working in harmony with each other.

The last time I was in the city one of the engineers was arrested for violating the smoke ordinance, and since that time I have had occasion to ride on several engines and experiment how to prevent black smoke, and have found by opening the door two or three inches or so after each fire it would do away with black smoke to some extent. The engine however, should be fitted with a brick arch, and this should be kept clean and the flues should also be kept clean. I notice where the flues are stopped up, or the space between the arch or flue sheet is stopped up, it is a very difficult matter to consume smoke in the firebox.

Of course, we are all aware of the difficulty in pulling out of St. Paul. It is impossible to prevent black smoke entirely with soft coal, but, as I said before, there can be an improvement.

In regard to the device Mr. Lynch spoke of, I was in Northern Michigan last fall, and they had an engine there fitted with this device, but they never claimed anything for it in the way of suppressing black smoke.

They claim they use this when an engine is working on a grade to its full capacity, and they can not get steam enough to pull the train.

I do not think you can tell much about this Whalen device by equipping only one engine with it. The only way to do would be to put them on eight or ten engines.

We have a few engineers here with us that have been running in and out of St. Paul for a number of years, and I would like to hear from them in regard to this matter.

A MEMBER: In regard to black smoke, it is a good deal as Mr. Goodwin says, it can not be done away with altogether, but a great deal can be done by the carefulness of the firemen and engineers. Of course there are times when you have to stop on a grade or when the engine runs leaky, that a man will have more black smoke than at other times, but if the engines are properly fired and the flues and brick arch in good condition I think that black smoke will be reduced a good deal.

MR. WOLGEMUTH: The subject of smoke prevention is as old as the locomotive, and one finds it difficult to add anything new to the already voluminous data.

So-called smoke consumers and systems have been invented by hundreds, and nearly all have met with the same fate. A few are worthy of note. The most successful are those that are simplest.

The author is of the opinion that smoke is not a question of adding complicated mechanism to the locomotive, but is one of co-operation. Co-operation of the designer, the builder, the general manager, and on down to the man at the coal chute.

To entirely eliminate black smoke is perhaps impossible, but it can be reduced to an amount that will please even the most fastidious.

To try and burn the smoke is not going back far enough. It must be prevented at the start. Primarily smoke means incomplete combustion, and any aid which makes the combustion more complete will help solve the problem.

Among the most efficient aids that are at hand for the purpose may be mentioned, first, a well designed locomotive; second, an intelligent and willing fireman; third, a good engineer that will work in harmony with the fireman; fourth, a brick arch; fifth, good coal; sixth, proper engine ratings.

The firebox should be so proportioned that sufficient depth is given to allow the thorough mixing of air with the gases from the fuel. It must have grate area enough to keep the amount of coal consumed per square foot of grate per hour below, say, 100 pounds, when the boiler is furnishing its maximum output. The grates should be so designed that air in sufficient quantities can get to the burning coal.

The ashpan must be provided with large dampers and cleaning doors, and the front end, including the exhaust tip, its location and the general arrangement of deflecting plate and netting must be especially designed for the quality of coal to be burned. By a willing fireman it is meant one who is in accord with the work endeavoring to fire as lightly as is consistent with the work to be done, and watching for ways to improve his methods.

The engineer and fireman must work in harmony to accomplish the best results; in fact, as previously stated, harmony must prevail from the general manager down.

One of the most valuable appliances that can be added to locomotives to reduce smoke nuisance is a properly made and located brick arch. The cost of maintenance is somewhat high, but the economy gained will help to offset the cost. The expense per arch for material and labor will amount to from three to five dollars, and the number of miles that can be made to the arch will depend to a great extent on the condition of the flues.

It is unnecessary to mention the benefits derived from good coal.

A proper engine rating will help materially in reducing smoke—more than is generally conceded.

Some years ago the Southern Pacific and B., C. R. & N. experienced with a system of smokeless firing, and, from what can be learned, with very satisfactory results.

Perhaps some of the members present can give some information concerning the present practice on these roads. Their method was light firing, together with a brick arch and a special firedoor. The door was so constructed that it compelled the fireman to use small scoops of coal, and was left open. For those who do not know its construction, I will endeavor to give it briefly. The door was divided horizontally in halves, the total opening being 12 inches high by 15 inches long. The bottom half swings in the usual manner. The upper half is hinged to the lower half and drops on the latter. The upper half is the part left open, and is 6 inches by 15 inches, making 90 square inches of opening. A standard 16-inch circular door has something over 200 square inches of opening. Above the upper half on the inside is an adjustable deflecting plate which is made to deflect the current of air toward the bottom of the box and against the brick arch. The door being left open would tend to keep the temperature in the firebox uniform. It is said that at first the fireman did not take kindly to the small door, but gradually grew to like them.

MR. LYNCH: I can say that that practice is not continued on the B., C. R. & N.

MR. T. A. FOQUE: The work of the B., C. R. & N., in regard to smokeless firing, may have been discontinued, but the plan has been followed very extensively, and I give them credit and believe the good they did will live for years to come.

I would not want the impression to prevail that we have reached the limit, so far as black smoke is concerned. Of course men will be careless at times, but I think that when they are doing the best they can under the circumstances action should be taken very slowly.

We do not use the brick arch in engines running into St. Paul. We can not afford it. Neither do we keep the firedoors open, for that means leaky flues.

We have received photographs of some of our engines going out of St. Paul, and when such volumes of smoke have been given off, as shown by the photographs, it is evident that the men have been careless or have met an emergency; therefore I think that co-operation on the part of Dr. Ohage and the railway companies will result in the greatest amount of good.

MR. C. J. MILLER (N. P. Ry.): One remark that Dr. Ohage made I wish to differ with. He said that railroads made no pretension to do away with black smoke; but they do. We have been cautioned time and again against this black smoke by the railroad officials.

I have been running in and out of St.

Paul ever since I have been here, and I find an improvement. We have three or four crossings in pulling out of St. Paul with trains pulling over them all of the time, and we often have to stop, and this makes black smoke and can not be avoided. We have a hill before us, and in climbing that hill after we get started we get along with very little black smoke, but going through the yard is where we have the trouble, and this is where the pictures were taken.

I noticed one picture of the N. P. engine pulling in, and I am satisfied that the engineer is a good capable man, but he came down from Duluth with a fireman that had never been into St. Paul, and I do not think that the engineer is responsible for that smoke, or the fireman either. We try all that we can, and hope that more improvements will be made in reducing the smoke, and we would like to help you all that we can, but we would like to have you give us time.

Mr. Van Alstyne: Speaking about burning hard coal, it is my understanding that the grates have got to be much larger to burn hard coal than soft coal.

Dr. Ohage: I would like to know what would be the increased cost in burning hard coal in the switch engines.

Mr. Lynch: It seems to me that in using coke in running out of St. Paul you would have to build a new engine. With coke you would have to have some special grate, and there will have to be brick fireboxes, special flues, special front end. I do not think that burning coke would be advisable. I think that the gases thrown off would be just as bad as the black smoke, and also with coke there is a certain amount of black smoke, unless you get the coke well burnt.—North-West Railway Club, December, 1904, meeting.

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ORIENTAL EXHIBITS BUILDING, LEWIS AND CLARK EXPOSITION, PORTLAND, OREGON

(Lewis and Clark Official Photographic Co.)

Discussion of Current Topics

A Courageous Governor.

Conspicuous amongst the names of men prominent in advocating and practical in effecting much-needed reform in the management of public affairs is that of Governor LaFollette, of Wisconsin. In the face of certain influences that are ever operating to subsidize and control public officials and which constitute a very material factor in determining their political success or failure, it requires more moral courage than is generally realized to espouse the true cause of the masses and utilize official power in advancing the best interests of our common citizenship. To such men the approbation of their own consciences, the confidence and respect of their fellow-men and a sense of freedom from being owned by any specially favored or favor-seeking interests constitute a reward vastly superior to the questionable material advantages which act as an incentive to so many in seeking public office. The abolition of the present nefarious fellow-servant doctrine and its substitution by equitable employers' liability legislation is recognized by Governor LaFollette as constituting one of the most important reforms of which society today stands in need.

In his special message sent to the Wisconsin Legislature several weeks ago Governor LaFollette took the ground that the quasi-public duties performed by men in railroad service, the dangerous character of their work, and the interest the public has in its execution, demanded the enactment of a thorough and efficient statute for their protection, and that the State should surround them with every reasonable safeguard. He commented upon the fact that the State of Wisconsin had no law for their protection except a confessedly weak and inadequate co-employe act, which, in the face of the contributory negligence plea, has proved miserably ineffective in the accomplishment of the end sought through its enactment. He further states that employment in railroad service is an extra hazardous one; that its dangers are ever present; that peril of life and limb attend upon almost every act; "and further, from the very character of the business, each employe is quite at the mercy of every other employe with whom he works. He is part of a system. He may be placed in great jeopardy through the carelessness of a fellow-servant, and yet compelled to accept the risk, or imperil others whose safety depends upon his self-sacrifice.

"He is in a service the discipline of which is necessarily severe. He is bound to work with his co-employe, whatever his character. He can exercise no choice of association. He is bound to use the appliances furnished, whatever their defects. He is forced to run engines, handle cars, haul trains, ride over tracks, and switches, and trestles, and culverts, and crossings, which he knows to be out of repair and which have been so reported again and again. He has no option.

"The railway employe can not quit the service. Once in the service, always in the service, is almost a maxim. Its very perils and hardships and tense nervous strain hold men fast, and, in fact, unfit them for any other life. But added to this, the practices of the railway companies tend to bind men to the service.

A railway employe dismissed for refusal to take out a defective engine, or use a defective appliance, would be checked off the company's record as insubordinate, and would find it extremely difficult, if not wholly impossible, to re-enter railway service at all. In the following words the Governor depicts, in the most clear and incontrovertible manner that words can express it, the exact position of railroad men under the operation of the existing fellow-servant doctrine.

"Consider," he says "in this connection, the position of the railroad employe. The rule of the company provides that he must know the condition of his engine, of every car, of every part and appliance of the same, of all the tools and implements with which he works. The trainmen are summoned by the company's callboy to take out a train a few minutes before it is due to leave. It is impossible that they should be in possession of all the knowledge which the rules impose upon them. Yet they are bound to profess this knowledge and acquiesce in the record which fixes upon them a responsibility therefor. If the railway employe learns of a defect and reports it the unwritten rules of the company and often the verbal orders issued require that he close his eyes to such defects and take out an unsafe engine or car, or use an unsafe appliance or run his train over an unsafe track or bridge. If he is crippled or killed, as the result of such defect, the railway company defends upon the ground that he was guilty of contributory negligence in using a defective engine, car or appliance, and, however great the negligence of the company contributing thereto, the crippled employe or his widow, if he were killed, is denied all right to recover.

"A law," he declares, "placing the legal responsibility where the moral responsibility is lodged in such a case would compel the railway officials to repair defects promptly rather than take chances in order to keep trains moving, and would save the lives of trainmen and passengers now so often sacrificed under the arbitrary orders of some official determined to acquire a reputation for driving business."

Continuing the subject, Governor La Follette referred to the obituary notices to be found each month in the official publications of the various railroad brotherhoods, and stated that "an examination of these journals for a period of the last sixteen months discloses that out of a total of 650 deaths reported, 195 engineers, or exactly 30 per cent., were killed in the service. There is clearly something radically wrong in the method of conducting the business where it is attended by such an appalling loss of life."

He said that all through the session of the Legislature to which his message was directed Brotherhood men had been present, "asking for the passage of a bill changing the harsh provisions of the rules which now prevail under existing law in this State, and that as the law stands today there is little, if any, protection for the railway employe, it being held that:

" 'In an action to recover damages claimed to have been caused by the actionable negligence of the defendant, contributory negligence of the plaintiff, however slight, precludes his recovering damages, notwithstanding that negligence of the defendant, however great, contributed thereto.' "

Rare indeed, he says, is "the case where it would not be possible to find some testimony on which the company could make a claim of slight contributory negligence. Any contributory negligence on the part of the railway employe, however slight, bars recovery for his injury or death, however great the negligence of the railway company may have been. If this rule of law is repugnant to our sense of justice, the fault lies with the Legislature."

It alone, he asserts, can change this rule, and it is in the power of that body to say if there is "slight contributory negligence on the part of the employe and great negligence on the part of the company contributing to produce the injury or death that the jury may determine what shall be just as between the employe and the railway company upon all the facts. Can it be doubted, if we enact such a law, that the railway companies will exercise greater care with respect to defective engines, cars and appliances, and a better supervision of tracks, crossings, bridges and yards? Can it be doubted that a strong, reasonable and just law, which affords protection to railway employes, will likewise be of great benefit to the public?

"If this Legislature will enact a broad, comprehensive law, and will also, by statute, provide for the prompt investigation of every case of personal injury or loss of life caused or occasioned by a railway company, where, in the discretion of the representative of the State, authorized to make such investigation, the public interests require it, and will provide reasonable requirements for the adoption of approved safety appliances, thousands of injuries would be avoided and hundreds of precious lives saved every year.

"There is," he says, "another reason why men engaged in this service are especially entitled to the careful consideration of the Legislature. The duties which they perform are quasi-public in character. The property of the public and the personal safety and lives of the public depend upon the fidelity and courage of the men employed in this service. The proper safeguarding of railway employes is, therefore, a matter of public concern. The Legislature may take such action as it deems wise in adjusting the measure of responsibility between the employer and the employed in the wide field of industrial activity occupied by individuals, co-partnerships and private corporations. But it must at once be perceived that the Legislature has quite another duty to perform in making the law that shall govern where the employes are working for a public service corporation, engaged in transporting persons and property."

The value of such a man as LaFollette to his State and country can be probably best appreciated by a comparison of his acts and declarations with those of such a character as Peabody, former Governor of Colorado, and many others occupying similar positions of responsibility and influence, who would not dare to openly espouse the cause of the wage-earner, regardless of how strongly its justice appealed to them, or the extent to which the general welfare of society demanded their so doing, lest their real masters—those whom they seek to serve primarily and in many cases exclusively—viz., the corporations and monopolies, might take offense.

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The Chicago Strike.

Up to the time of going to press, the Chicago strike is still unsettled, although indications point to its early termination. Press dispatches state that the joint council of the Teamsters' Union appointed a committee of ten men, with power to confer with representatives of the employers, looking to the ultimate and speedy adjustment of hostilities, the said committee being invested with power to act. It is expected that concessions will be made on both sides, and that before long industrial peace will again prevail in Chicago, at least as far as the teamsters' strike is concerned. Reports of a scandal of the most serious nature, involving representatives of the Employers' Organization and the Teamsters' Union in charges of bribery and corruption, have followed as a result of the grand jury investigation being held to inquire into certain criminal charges made in connection with the strike. Certain acknowledgments made by men prominent in the controversy on both sides have led to the assumption that all concerned are guilty as charged. The investigation has not yet been completed, nor court proceedings advanced sufficiently to justify criticism, and, as a matter of justice, the same should be withheld at least until the investigation is concluded. The subsidized press of the country is, however, working overtime in trying to identify organized labor in general with the iniquity alleged against the president of the Teamsters' Union, ignoring in their condemnatory editorial comments the fact that an official representative of the employing forces is credited with acknowledging that he took the initiative in the bribery and corruption proceedings. Amidst such general and unjust discrimination it is refreshing to find a newspaper that will take a stand in the interests of justice and fair play to the extent expressed in an editorial appearing in the Indianapolis Sun of June 17, as follows:

John C. Driscoll, former secretary of the Coal Team Owners' Association, of Chicago, says that in four years he has paid over $80,000 to Chicago labor union leaders for the purpose of either averting or ending strikes.

What an opportunity for the prejudiced and unfair plutocratic press to shoot sarcasm at the unions. What an opportunity to cry "thief"—to damn anything and everything connected with organized labor.

There are many crooks. You may find them in church pews, in the homes on the avenue, in the fashionable clubs, riding in private cars, occupying positions of trust and great profit; yes, even in labor unions.

It is possible that John C. Driscoll has bribed and has found men in the unions weak enough to accept his dirty dollars.

But in the name of decency what has this to do with the sacred cause of organized labor?

Bigelow, Milwaukee banker, stole a million. Then all bankers must be thieves, following the same line of argument.

A minister disgraces his cloth, and so all ministers become hypocrites.

A public official loots the treasury, and, therefore, all public officials are crooks.

That isn't argument. It is rot, and prejudice; but no more preposterous and unwise than the hatred of a class of dollar worshipers who would, if they could, put organized labor where the peasants of Russia now are.

The few dishonest men in any organization can not harm that organization if its principles are based on right and justice.

The unions of America have their flaws and their faults, but their mission is the elevation of the toilers and the improvement of conditions in the homes.

The work will continue long after John C. Driscoll has passed on and been forgotten by better men.

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Another Howl Against Labor.

Mr. D. M. Parry, who has been elected to succeed himself as president of the National Association of Manufacturers at the recent convention of that organization held at Atlanta, Ga., delivered an address which, for virulent denunciation of organized labor, venomous vindictiveness, un-American intolerance, egotism, narrowness and prejudice, measures fully up to the standard of the man himself, and was thoroughly compatible with the estimation in which he is held in the public mind. He commenced his tirade by declaring that, "We (the Manufacturers' Association) have much cause for felicitation," and declared "that it is an agreeable reflection that the prosperity of the Nation still continues."

Then, in a fit of apprehension over the growth of the municipal ownership sentiment, he asserts that Macaulay prophesied in effect "that the masses of the American people would in the course of several generations use their right of suffrage to confiscate all wealth in the name of the State," and declares that "this prophecy certainly places a low estimate on the moral perceptions of the common people and displays a woeful lack of faith in the ability of men in general to govern themselves." He then classifies municipal ownership in his criminal category in the following words: "It is said that men vote in accordance with their interests, and some men doubtless construe it to be for their interests to vote for confiscation." Know ye, therefore, all men, that municipal ownership is "confiscation," because the indomitable Parry hath so pronounced it, and, be it remembered further, that its advocates are "*demagogues*," because he hath so declared them.

He urges the manufacturers and business men to take an active part in politics, so that they can control legislation—apparently not realizing how foolish it is to ask those busy gentlemen to actually give their precious moments to political matters, when for an expenditure of money much less than would represent the value of the time and energy thus invested, they can have legislation to order whenever they desire it. He congratulates the National Association of Manufacturers upon what he is pleased to designate as the great work they have done in preserving the integrity of American principles by their success in defeating the eight-hour and anti-injunction bills in Congress; and in a lengthy dissertation upon the subject of organized labor, endeavors to show by arguments peculiarly his own, that that institution has worked infinitely more harm than good to the wage-earners in general, acknowledging, however, that organized labor is a powerful factor, and one that challenges the most serious consideration of his colleagues and himself. He advocates that workmen be shown that organized labor endangers their own freedom and that if the policy of their organizations were successful, it would result not only disastrously to their independence, but also to their material prosperity; adding that in this land of individual initiative the common people are better fed, better clothed, less chained down by drudgery, experience more of the enjoyment of life and are the most intelligent of any of the nations of the earth. He forgets to explain, however, that such of these favorable conditions as at present *do* exist are attributable to the fact that the workingmen of the country have availed themselves of the very individual initiative to which he refers, for the purpose of collectively defending their material interests against the rapacious greed of the class of manufacturers and business men represented by his association and himself, and that had they failed to so do this life-crushing drudgery and oppression existing in other countries, and which is directly attributable to conditions restraining the toilers of those lands from uniting to protect their common interests, would also exist in the United States, and will yet if the tactics being advocated by him and those whom he represents succeed. In view of the extent to which Mr. Parry and his followers have, by influences questionable and otherwise, contributed to the defeat of just legislation in the interests of the working classes, the great necessity for wage-earners to utilize their voting strength in electing to legislative bodies men upon whom they can rely for fair treatment, can not be too often or too forcibly emphasized.

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The Worst Yet.

D. M. Parry is outrivaled. Like Kuropatkin, the degraded Russian general, he may soon find himself substituted by a Linevitch in the person of one C. W. Post, of Battle Creek, Mich., whose hysterical fanaticism against organized labor (the standard by which capability for leadership is apparently measured by manufacturers' associations and citizens' industrial alliances) has attained to a pitch of intensity which bids fair to secure for him the supreme and undisputed generalship of the entire labor-crushing forces of America.

While there is no question as to the virulence of his prejudice against wage-earners who are so presumptuous as to unite for the protection of their common interests, one familiar with circumstances can not but speedily reach the conclusion that a spirit of base mercenary greed is the underlying motive primarily responsible for all his frothings. Post is the manufacturer of a cereal food called Grape Nuts, and a substitute for coffee known as Postum. He has spent much money in advertising these commodities and no doubt feels (his professions of pure, patriotic fervor to the contrary notwithstanding) that the notoriety which he is working up for himself will eventually attach its identity to the aforementioned products of his factory, and morbid curiosity lead to their increased consumption on the same principle as Nan Patterson hoped to succeed on the stage.

Under the caption of "Proclamation of Freedom," he has recently had published in a number of newspapers a pronunciamento which, after the fashion of the President's messages and other documents of great importance, is subdivided under thirty distinct heads. In this document, which he boastingly declares it cost him $20,000 to have published, he charges the trades unions and the labor press generally with aiding and abetting crime; calls them anarchy tainted; states that 85 per cent. of Americans hate their tyranny; classes the union label as the "union boycott"; attributes much of the sufferings of working people to union domination, and declares that we (himself and other fanatical antilaborites) must help the said suffering working people to burst the bonds of their union oppressors. He declares that "Americans must act," and winds up with an avowal of faith in the belief that the blood of 1776 still coursing in their veins will tingle and call until they awake, and that "then Americans *will* act." Notwithstanding that such ravings carry with them the conviction that they have emanated from a disordered mind, this man Post has been chosen President of the National Citizens' Industrial Association of America, and immediately subsequent to his election delivered a speech in which he declared "that the association would proceed at once to organize citizens' associations in every city and village in America, in order to mass the citizens for the protection of their business interests, to urge the industrial liberty of each person against the overt acts of labor unions, and to guarantee the continuance of the industries of the country." He announced the declaration of principles of the association, amongst which are the following: "No restriction as to the use of tools, machinery or material, except such as are unsafe; no limitation of output; no restriction as to the number of apprentices and helpers when of proper age; no boycott; no sacrifice of independent workingmen to the labor union; no compulsory use of the union label. That power, through organization, be placed in the hands of the people to effectually control the acts of all organizations when such acts relate to the public welfare, thus to perpetuate the industrial liberty of every citizen and prevent interference with the continuous operation of industries."

From the foregoing we would infer that "no limitation of output" means unlimited hours of work and labor-racked and broken operatives. "No restriction as to number of apprentices and helpers when of proper age" means, of course, the unchecked employment of child labor and the blighting of the race, in order that young lives may, without interference, be sacrificed to the god of greed. "No boycott" means, of course, compulsory patronage of the products of sweatshops. "No sacrifice of independent workmen to the labor union" contemplates the unlimited and unrestrained employment of armed criminals as strike breakers during industrial disturbances. "No compulsory use of the union label" can be taken as a demand for the supremacy of the sweatshop and the exclusive consumption of its products. "That power, through organization, be placed in the hands of the people to effectually control the acts of all organizations," etc., simply expresses a demand for the establishment of the same control and espionage over workingmen and their organizations in America as at present exists in Russia, and which, unless indications fail miserably, will soon be discontinued there as the result, if necessary, of bloody revolution.

Mr. Post, continuing, states that in every 800 citizens about 20 belong to the labor unions. He declares that "the loss of lives and treasure and the galling tyranny have aroused the people until a stern demand for the maintenance of law and the rights and freedom of the individual and the abolition of union tyranny is heard in every hamlet in this broad land." No doubt Mr. Post is urged to thus bewail the loss of "treasure" by a contemplation of the number of additional yachts, castles, mansions, twenty thousand dollar automobiles, elaborate monkey and pug dog dinners and expensive scandals that the moneyed aristocracy of America are missing as a result of the existence and operation of labor unions, which have diverted the funds that would be thus invested to the education of our common citizenship, the advancement of its health, the protection of poor children, increased comfort in little homes whose inhabitants would, but for this great agency, be still living in misery and squalor, and to the accomplishment of other great and good purposes that make for the moral and material advancement of the race.

Mr. Post and his associates will apparently be satisfied with nothing less than conditions placing the governing power of the North American Republic as undisputedly in the hands of its aristocracy of wealth as has the governing power of Russia been at the disposal of her bureaucracy. When, under the leadership of Father Gopon, the representatives of the Russian people marched to the palace of the Czar to appeal for the right to live as human beings, a member of the autocratic, parasite class which for centuries has with impunity been plundering and pillaging the common citizenship of that unfortunate country is credited with a remark to the effect that this overbearing rabble should be crushed. That the country no more existed for them than a dog does for its fleas.

Very much in keeping with the sentiment thus expressed is the utterance of this man Post in an address delivered by him before the National Association of Manufacturers, during their convention recently held at Atlanta, Georgia, in which he is credited with the following remarks: "A workman carries some boards to a building, and a horse hauls some more. Which creates, and to which should the building belong? Both work and both execute, but neither originate or create any wealth whatever. Both are paid an agreed, industrial, and full equivalent for their services. The horse his oats, hay and water, and the workman his money. Physical labor is not a creator; mind is the only creator."

Post shamelessly places his fellowmen on the same level with the beast of burden when he says that the "idea" is the creator and should own everything created except the food consumed by the horse and the man. It is not our purpose to argue such a point with Mr. Post or anyone else. For, in the first place, the fact that a man entertains views of this kind is a clear demonstration of his unfitness for membership in society and his lack of any right to be outside the confines of a penal institution or an insane asylum. But to those who might possibly be influenced by such a remark, we would suggest that if the world were depending upon "ideas" for constructive development, it would at this moment be as the dawn of creation found it, and that Mr. Post and others of his ilk would, if in existence at all, be filling that "social" position so compatible with their nature and instincts, at present occupied by those gentlemen who, clothed in nature's most primitive garb, inhabit the jungles of Africa. The lot of employés depending upon Mr. Post and men of his stamp for work would, were it not for the protection of organized labor operating directly or indirectly through its various influences, be too horrible to contemplate. With a view to maintaining their existence that they might continue to toil in creating wealth for him, he would no doubt give them enough "oats" (or possibly resort to a cheaper substitute in the form of "Grape Nuts") upon which to subsist, in addition to such other bare necessities as might prove essential to the maintenance of life.

Judging from the foregoing illustration of his point in his remarks to the Manufacturers' Association, this is all a horse would need, and in his estimation a workingman is apparently entitled to no more consideration than a beast of burden. The lamentable feature of this whole business is that this fellow is invested with leadership, from which it is reasonable to infer that the organization which has placed him at its head is actuated by the same principles and governed by the same economic and social considerations as is he himself. Consequently they are equally responsible, for through him as their leader they assail existing social and industrial conditions, with a view to substituting them with a system of slavery. It becomes, therefore, the duty of all patriotic citizens, whether they be members of organized labor or not, to accept the challenge and be governed accordingly. Members of the Citizens' Industrial Association have, of course, the option of severing their connection with that body and thus repudiating such contentions, and in the light of this fact their failure to do so must necessarily be regarded as an endorsement of C. W. Post and his contempt for and prejudice against the working classes, and his antagonism of their rights and interests.

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Elect the Right Men.

The report of the New York Legislative Board, which appears in this issue, but lends added emphasis to the great necessity confronting the working classes for taking a deeper and more direct interest in the election of public officials in general, and members of legislative bodies in particular. It demonstrates how little consideration is extended wage-earners by law-making powers, and, also, how unimportant "the workingman" becomes to the average politician after election, as well as the indifference if not actual hostility they evince towards his interests after he has endowed them with the power they so eagerly seek from him when candidates.

This condition of affairs is attributable to the fact that many of the men at present being placed in public office are brought up amidst environments where contempt and aversion for the toiler constitutes an essential feature of their training. Under such influences a prejudice against organized labor is developed and nurtured, as well as a resentment contracted from their recognition of the power and prestige possessed by wage-earners as a result of combined effort, and which, whenever the opportunity presents itself, such public officials never fail to assail in an attempt to neutralize or destroy.

A majority of this class of office holders are recruited from business and professional life, those of the latter being principally lawyers. It is strange to contemplate and difficult to understand why an element in our social and economic structure entrusted with responsibilities and relied upon for the performance of works of skill and daring, upon the successful performance of which the very existence of society depends, should be so universally excluded from the privilege of holding public office. It is, we say, inexplicable that in the election of public officials men from the ranks of this element are seldom or never considered as eligible. Particularly does this appear inexcusable when it is considered that the men constituting the said element have it in their power to choose from their own ranks and elect to office candidates whose knowledge of the wants of the wage-earner derived from the school of practical experience will insure their legislative interests fair consideration and just treatment. It is safe to say that on the whole a majority of men being elected to public office are more or less inoculated with the virus of "Parryism" or of the more modern mania known as "Postism." The fact that they are so affected is strikingly evident when, in their official capacity, the demands of the wealth-producers for fair and equitable treatment are presented for their consideration. Their open hostility or poorly-disguised aversion on such occasions is strongly in contrast with their pre-election professions of love for the "dear workingman."

That such men ever hold office is attributable to apathy, unquestioning partisan loyalty or short-sighted political prejudice on the part of wage-earners. Whenever workingmen vote unitedly, with the advancement of their own most vital interests always in sight, our legislative boards will find it much easier to secure the enactment of legislation in our behalf than under existing conditions.

Too much importance can not be attached to the following words appearing in the introductory sentences of the New York Legislative Board's report, viz., "That in order to reach out properly for what belongs to us we must unite at the ballot-box, and not only oppose our enemies but make sure that a fair percentage of our own are sent to our law-making halls." It is to be feared that until "a fair percentage of '*our own*' are sent to our law-making halls" that the appeals of the toilers for just legislation and at least as fair treatment as is accorded workingmen of other countries will continue to be made in vain. It may be well to call attention here to the fact that the United States is deplorably behind all of the other civilized nations of the world in the matter of protective legislation for men engaged in railroad service. It is interesting to note Senator Hill's attempt to play that old legislative trick of changing a few words in the measure so as to entirely alter and destroy its intent and purpose. No doubt if the fidelity of our legislative board at New York's capitol had not frustrated his little plan the measure would have become a worthless law and the Senator sought to have himself acclaimed as the great friend of railroad men and the sturdy champion of their interests, and later, when the law would have proven unconstitutional or otherwise worthless, he, no doubt, would have proclaimed that he had done *his* part and in all probability would have blamed the courts for its failure to operate as expected by those whose interests it was supposed to protect.

Inasmuch as other classes are distinctly represented in the legislature and their interests advanced through the exchange of influences, recent experiences emphasize and justify the conclusion that the only way in which workingmen can secure anything like fair or just consideration is by utilizing their political prerogative to place in our various legislative bodies representatives from their own class of sufficient influence to insure their demands respectful treatment.

Illinois Legislation.

Bro. W. G. Edens, legislative representative of the Brotherhood of Railroad Trainmen, reports that Senate bills Nos. 465 and 466, relating to safety appliances and the inspection thereof, and which are published herewith, have passed the Illinois Legislature and are already signed by the Governor. Relative to the Co-Employe or Fellow-Servant bill the same old story comes from Illinois as from other States where railroad men have been endeavoring to secure for themselves through the law-making bodies, some measure of protection against the injustice and iniquities of the statutory and common law fellow-servant doctrine as it stands today. That story is that through some means or other the bill failed of passage. Many of these bills, although coming very, very close to enactment, have, with one or two rare exceptions, failed to become laws.

In the case of Illinois, Bro. Edens states that the "Drew Bill" (No. 163 in the House and No. 456 in the Senate), relating to the modification of the fellow-servant doctrine, was advanced to the second reading in the House and reported out of the Judiciary Committee in the Senate *unanimously*. On the following day, at a *special* meeting of that committee, this action was *reconsidered*, the members constituting this *special* meeting of the Judiciary Committee thus assuming the responsibility for keeping from helpless families of railroad men the compensation that is justly due them, and which is so often their only reliance for a livelihood after their breadwinner has been crippled or killed.

This is a fearful responsibility to assume, and little do these men know how far-reaching may be the effect of their treacherous action in this matter, or what untold misery it may bring to poor, helpless widows and their destitute orphans. Few men possessing a conscience, together with a proper appreciation of the consequences of such a step, would care to be a party to the transaction.

Bro. Edens also reports that a bill relating to the working hours of railroad employes, and another providing for the full train crews, passed the House—"but on the other hand, in the Senate were referred to the Committee on Railroads, where they died in the closing hours of the session." He states that these measures were all supported by the legislative representatives of the O. R. C. and

B. of R. T., as well as by the members of the Joint Labor Conference, representing the Illinois State Federation of Labor, the Chicago City Federation of Labor and the United Mine Workers of Illinois. Vigorous attempts were made, but successfully opposed by labor's representatives at the Illinois capitol, to repeal the Convict Labor Law, amend the Child Labor Law so as to permit of the employment of children on the stage, to amend the Garnisheement law reducing the exemption from $15 to $10, and to enact certain objectionable laws relating to fraternal benefit societies.

The following is a copy of Senate Bills Nos. 465 and 466, which were passed at the recent session of the Illinois Legislature, and are now laws on the statute books of that State:

465—

A Bill for an act entitled "An act providing for the inspection of equipment and operation of safety appliances on railroads engaged in moving traffic between points in the State of Illinois."

SECTION 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly:* An inspector of automatic couplers, power brakes, and grab irons or hand-holds, on railroad locomotives, tenders, cars, and similar vehicles, shall be appointed by the Railroad and Warehouse Commissioners, within thirty days after this act goes into effect, who shall hold office for two years, unless sooner removed for cause, and until his successor is appointed and qualified. At any time a vacancy occurs in the office, the Railroad and Warehouse Commissioners shall immediately fill the vacancy by appointment.

No person is eligible to hold the office who is an officer or an employe of a railroad company or who owns or is interested, directly or indirectly, in the stocks or bonds of any railroad company, or who has not had at least seven years of practical experience on some line of railroad operated in the State of Illinois in one or more of the following capacities: Engineer, fireman, conductor, yardmaster, brakeman, train baggageman, switchman, car inspector or repairer.

Sec. 2. Before entering on his duties the said inspector shall give bond to the State of Illinois in the sum of three thousand dollars, with two or more sureties, or a bond and surety company, acceptable to the Railroad and Warehouse Commissioners, conditioned for the faithful performance of his duties, and shall also take the usual oath of office, which oath and bond with the approval of the Railroad and Warehouse Commissioners endorsed thereon, shall be deposited with the Secretary of State.

Sec. 3. Said inspector shall be provided with transportation *at the expense of the State* and be paid a salary of fifteen hundred dollars ($1,500) per year and necessary expenses, not to exceed one thousand dollars ($1,000) in any one year, which shall be paid in the manner now provided by law for the salary and expenses of the Railroad and Warehouse Commissioners. He shall have his office in the State House, in the office of the Railroad and Warehouse Commissioners, and shall be under the supervision of said Commissioners.

Sec. 4. It shall be the duty of the said inspector to inspect the couplers, power brakes, and grab irons or hand-holds, on the railroads engaged in moving traffic between points in Illinois, and make weekly reports of his inspections to the Railroad and Warehouse Commissioners, reporting all locomotives, tenders, cars, or similar vehicles, which are found to be defective, giving the numbers of same, road on which they are found, and road owning same, if known.

466—

A Bill for an act to promote the safety of employes and travelers upon railroads by compelling common carriers engaged in moving traffic by railroad between points in the State of Illinois to equip their cars with automatic couplers and continuous brakes and their locomotives with driving wheel brakes, and for other purposes.

SECTION 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly:* That from and after the passage of this act it shall be unlawful for any common carriers engaged in moving traffic by railroad between points in this State to use on its line any locomotive in moving such traffic, not equipped with a power driving wheel brake and appliances for operating the train brake system, or to run any train in such traffic after the passage of this act that has not a sufficient number of cars in it so equipped with power or train brakes that the engineer on the locomotive drawing such train can control its speed without requiring brakeman to use the common hand brakes for that purpose.

Sec. 2. That from and after the passage of this act it shall be unlawful for any such common carrier to haul or permit to be hauled or used on its line any locomotive, car, tender or similar vehicle used in moving state traffic not equipped with couplers, coupling automatically by impact, and which can be uncoupled without the necessity of men going between the ends of the cars.

Sec. 3. That when any person, firm, company or corporation engaged in moving traffic by railroad between points in the State of Illinois shall have equipped a sufficient number of its cars so as to comply with the provisions of section 1 of this act, it may lawfully refuse to receive from connecting lines of road or shippers any cars not equipped sufficiently in accordance with the first section of this act, with such power or train brakes as will work and readily interchange with the brakes in use on its own cars, as required by this act.

Sec. 4. That from and after the passage of this act it shall be unlawful for any railroad company to use any locomotive tender, car or similar vehicle, in connection with the movement of traffic between points in this State that is not provided with secure grab irons or handholds in the ends and sides of each locomotive, tender, car, or similar vehicle for greater security to men in coupling and uncoupling cars.

Sec. 5. That the standard height of drawbars, measured perpendicularly from the level of the tops of the rails to the center of the drawbars upon standard gauge roads shall be thirty-four and one-half inches; narrow gauge roads, twenty-six inches, and that the maximum variation from such standard height to be allowed between drawbars of empty and loaded cars shall be three inches.

Sec. 6. That any such common carrier using any locomotive, or tender running any train, or hauling or permitting to be hauled or used on its line any car, or similar vehicle in violation of any of the provisions of this act shall be liable to a penalty of one hundred dollars for each and every such violation, to be recovered in a suit or suits to be brought by the State's attorney in the circuit court of the county having jurisdiction in the locality where such violation shall have occurred; and it shall be the duty of such State's attorney to bring suits upon duly verified information being lodged with him of such violation having occurred; and it shall also be the duty of the Railroad and Warehouse Commission to lodge with the proper State's attorneys information of any such violations as may come to its knowledge; *Provided*, that nothing in this act contained shall apply to trains composed of four wheel cars or to trains composed of eight wheel standard logging cars, where the height of such car from the tops of the rails to the center of the couplings does not exceed twenty-five inches, or to locomotives used in hauling such trains when such cars or locomotives are exclusively used for the transportation of logs, or to street cars, or to trains, locomotives, tenders, cars and similar vehicles used in interstate commerce.

Sec. 7. The provisions and requirements of this act shall be held to apply to common carriers engaged in moving traffic by railroad between points in this State and shall apply in all cases, whether or not the couplers brought together are of the same kind, make or type, and the provisions and requirements hereof relating to power driving wheel brakes, train brakes, automatic couplers, grab irons and the height of drawbars shall be held to apply to all trains, locomotives, tenders, cars and similar vehicles used on any railroad engaged in moving traffic between points in the State of Illinois, excepting those trains, cars and locomotives exempted by the provisions of section 6 of this act, and all those trains, locomotives, tenders, cars and similar vehicles used in interstate commerce.

Sec. 8. That whenever, as provided by this act, any train is operated with power or train brakes not less than fifty per centum of the cars in such train shall have their brakes used and operated by the engineer of the locomotive drawing such train; and all power braked cars in such train which are associated together with said fifty per centum shall have their brakes so used and operated; and, to more fully carry into effect the objects of this act, the Railroad and Warehouse Commission may, from time to time, after a full hearing, increase the minimum percentage of cars in any train required to be operated with power or train brakes, which may have their brakes used and operated as aforesaid; and failure to comply with any such requirement of said Railroad and Warehouse Commission shall be subject to the like penalty as failure to comply with any requirement of this section.

Sec. 9. That any employe of any such common carrier who may be injured by any train, locomotive, tender, car or similar vehicle in use contrary to the provisions of this act, shall not be deemed to have assumed the risks thereby occasioned, nor to have been guilty of contributory negligence, because of continuing in the employment of such common carrier or in the performance of his duties as such employe after the unlawful use of such train, locomotive, tender, car, or similar vehicle, had been brought to his knowledge.

Sec. 10. The Railroad and Warehouse Commission is hereby empowered to grant to narrow gauge railroads, upon a full hearing and for good cause, a reasonable extension of time in which to comply with the provisions of this act; *Provided, however*, that such extension or extensions shall not exceed in the aggregate the period of one year from and after its passage.

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Contributed

The Harrisburg Disaster and Its Real Cause.

In its issue of May 15th, the Wilmington "Every Evening" editorially calls attention to the fact that "of all the newspaper comments upon the terrible accident on the Pennsylvania Railroad at Harrisburg, no one, so far as it has seen, has given an intimation of the real responsibility for this disaster." "Not one," says the Every Evening, "has gone to the truth of the matter by ascribing the accident to the only cause to which it may be justly and honestly attributed."

In this much of the editorial I heartily concur. It was a fact, and one much commented upon by experienced railroad men, that the newspapers in giving their accounts of the wreck, placed so much stress upon the dynamite or powder explosions, that the public eye was in this way drawn from the real cause of the catastrophe. But this publication then takes upon itself the duty of trying to shift the responsibility for this deplorable accident, and endeavors by a sort of legerdemain to show the public that the real or primary cause was the passage by Congress of the Safety Appliance law, which requires that the speed of trains shall be controlled by the use of air brakes, rather than by the old hand brakes, and it is with this that I take issue.

The "Every Evening" makes the extravagant statement that the cause of this accident "may be justly and honestly attributed to the interference by people who have not the slightest practical knowledge of railroad business with the management and operation of railroads, through the medium of unwise and misdirected law."

It also says: "Had the matter been left entirelv with the managers of the railroads, as it should have been, they would no doubt have worked out the problem in a satisfactory and reasonably safe manner. . . . . Had the folly of attempting to regulate the operation of railroads through laws enacted, and enforced also, by people who are entirely ignorant of railroad operation, been avoided, this terrible accident in all probability would not have happened. . . . . The unwise and unwarranted interference of the law has, therefore, brought about a great disaster."

The position taken by the editor, that railroads should not be controlled by law, for the reason that the lawmakers know nothing of the details of operation, is a novel one, and brings to the mind of the practical railroad man who has read his article the question: Would it not be well to limit the writing of editorials to men who know whereof they speak?

It is true that the east-bound freight "buckled," and caused one or more cars to bulge out over the track upon which the west-bound express was approaching. But what was the cause of this train "buckling?" It was not because Congress had passed a law requiring the use of air brakes, but because the railroad company was operating only a part of those air brakes in that train.

The brakes which were being operated were on the forward portion of the train, and when they were applied it caused the forward portion to suddenly slacken speed, while the rear portion, being unbraked, kept up its momentum, and came into collision with the forward portion, causing the cars in the middle of the train to be wrecked. Had all the brakes in this train been under the control of the engineer, the accident would not have happened, for the reason that they would have been applied simultaneously with equal force throughout the whole train, and all cars in the train would have stopped in unison, thus preventing any collision.

But the "Every Evening" says this train was composed of 68 cars, and that it is impossible to operate the air brakes along all the length of such a train from the locomotive. If the statement that a 68-car train is too long to operate all of the brakes from the locomotive were correct, we should answer it by saying: Cut down the length of the trains so that all of the brakes can be so operated, for this is admittedly the only proper and safe way to run trains. But it is evident that the editor and his adviser have had no practical experience in modern train-braking, or they would not say it was impossible to operate the brakes on 68 cars from the locomotive. I question whether in this instance the editor was as considerate as those "unwise, ignorant, interfering" lawmakers with whom he finds so much fault. As a rule lawmakers hear both sides of a case before acting, while it is apparent that the editor in preparing his article did not consult those who were familiar with the practical operation of air brakes.

The writer has for many years been employed as a trainman on a road which operates long freight trains—many of them having more than 68 cars—and it is his experience that they can be, and have been, successfully handled with all of the brakes under the control of the engineer on the locomotive, and there is no good reason why this can not be done on all other railroads, and had it been up to this time in universal practice much unnecessary loss of human life would in the past have been avoided.

The esteemed editor in speaking of the application of air brakes to freight trains says:

"How the system was worked is attested by the numerous wrecking of freight trains which has marked the operation of every railroad system in the country since the law has been in force."

Here again he displays his lack of knowledge of the true conditions throughout the country. It can be said without fear of contradiction, that on systems where it is the practice to operate the brakes on all cars in a train under the direct control of the engineers, such accidents as the one which occurred at Harrisburg are practically unknown. It is only upon those roads which operate a portion of the brakes from the locomotive that such accidents happen.

The great danger to life and property attending the unwise practice of operating only a portion of the brakes from the locomotive, has been repeatedly brought to the attention of the railroad managers both by their employes and the Government officials as well, but in many cases this advice has been unheeded. It has been discussed before the committees of Congress. It has been brought out in the debates of Congress. It has been commented upon by the Interstate Commerce Commission in its report to Congress, and in the quarterly accident bulletins issued by it. Accident Bulletin No. 1, issued by the Commission, shows that for a period of only three months there were no less than 205 accidents due to this very cause, and in these accidents 130 trainmen were killed and injured. And this is not all. The bulletin adds:

"The above total, 130, includes only those cases which clearly come within this class. There are many other accidents, no doubt, classed as falling from cars, in which the injuries are partly due to violent movements of cars which would not occur if all the cars in the train were under the full control of the engineman, by means of his air-brake valve."

The "Every Evening" argues in favor of the old hand brake, and says that had it not been for the Safety Appliance law "this terrible accident in all probability would not have happened." It is quite probable that had the speed of the train been controlled by the hand brakes, it would have collided with the shifting engine, the sight of which caused the engineer to apply the air brakes.

The beneficial results of the use of the air brake, aside from the life-saving feature, have been so great that to again resort to the use of the old hand brake would be a step backward which no railroad manager would be willing to take. The use of the air brake has been one of the greatest factors in the safe and prompt movement of the enormous railroad traffic of today, and this is attested by the railroad managers of the country, I believe, without exception.

That this would be the result of the adoption of this appliance was, from experience, well known to all interests, including the representatives of the railroads, who appeared before the committees of Congress when this legislation was under consideration, for at the time of the passage of this law, in 1893, a large number of freight cars in the country had already been equipped with air brakes, and freight trains were then being successfully operated by them. But notwithstanding this the "Every Evening" says:

"The application of air brakes to freight trains was the result of a law of Congress, and the railroads of the country were compelled (and under urgent protest) to comply with its provisions, without the opportunity of ascertaining, by complete investigation, whether the system was the proper one or not."

It is true that the roads were compelled "under urgent protest" to comply with this law. But this is nothing remarkable. Can the distinguished editor point to an instance wherein a railroad company, or any person for that matter, submitted without protest, and "urgent" protest too, to the passage of a law which meant to it or him an expenditure of money? The railroads not only opposed the passage of this law, but they have opposed the passage of all laws which have been passed by Congress in the interest of their employes. If the men who own railroads were not human this might not be true, but since they are only like the rest of us, I suppose they dislike as much as we do to be put under restraint, and I am sure they have as much right to.

It is suggested that it would have been better to have left this matter "entirely with the managers," rather than trying to control it by law. This is precisely the argument which was used by the railroads against the passage of this law, but still Congress, and wisely too, thought it best to make it obligatory upon the roads to adopt these appliances, rather than to leave it optional with them.

Could it be reasonably expected that the railroads which were to stand the expense of this equipment, would look at it in the same light, and realize its necessity to the extent that Congress did? It would have been unnatural for them to do so, but the question might better be answered by the following quotation from an address delivered by a railroad officer before the Central Association of Railroad Officials at St. Louis:

"We had to be driven to the general use of the air brake, without which we would not now think of railroading, and it looks very much like we will have to be driven to the greater use of it. The result, I am sure, will prove beneficial in the long run."

When the managers of those railroads which use air brakes on only a portion of their freight trains will permit themselves to take cognizance of the true conditions brought about by this practice and look more to the safety of the operation of trains, rather than to the trouble and expense of keeping their air-brake equipment in position and condition to be operated, and "buckle" down to the use of all of the air brakes in each train as contemplated by the Act of Congress, then, and not until then, will the "buckling" up of trains, such as occurred at Harrisburg, cease. In this regard we are pleased to note that one newspaper reports that the management of the Pennsylvania Railroad has issued orders that no less than 60 per cent. of the brakes in each train shall be operated from the locomotive instead of 50 per cent. as heretofore, and another one reports later that they have finally decided that all of the brakes are to be so operated. But will the Harrisburg accident also serve as a sufficient example for the other roads which have followed the same dangerous practice, or will they too continue their folly until its dire results strike nearer home?

H. R. Fuller.

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Fourth Annual Report, Legislative Board, B. of L. F. of the State of New York.

Albany, N. Y., May 6, 1905.

To the Members of the Brotherhood of Locomotive Firemen, State of New York:

Dear Sirs and Brothers.—Pursuant to the requirements of section 251 of the Constitution, we respectfully submit the following, as our report of the labors performed by us during the session of the State Legislature, which came to a close on the 5th of May. It is our intention and purpose to give you every detail, and condition, in order that you may know fully our position, and be capable of judging for yourself as to the difficulties of getting any legislation beneficial to our class, while we are not more directly represented than we are at present, by this we mean, that in order to reach out properly for what belongs to us, we must unite at the ballot box, and not only oppose our enemies but make sure that a fair percentage of our own are sent to our law-making halls.

It goes without saying, and as our reports will show, that each year we get less, and as the session just closed was the worst ever held, and labor, although united on nearly every measure presented, received less, both in fact and consideration, than at any time since we were represented at the capitol. We feel justified in laying this question before you squarely; what remedies are best to pursue, is a question that must be determined very soon, and the lines are being drawn closer every day as the events of the past year will convince the most sceptical among us, that action is necessary and the time is now. Nearly all good laws enacted in the interest of organized labor in the past have been declared unconstitutional by the courts, which leaves us today almost in a helpless condition, and the members of the Legislature, placed there through our franchise—are not even fair in their treatment, and no amount of pressure seems to have an influence over them when our interests are in the balance, the large majority of them being diametrically opposed to our cause. Why permit this to continue is the question before each and every Trade Unionist in this State, and if permitted t8 go unchallenged for a few years longer, where will it place us, is the next question.

During the session just closed the relations of the representatives of organized labor stationed here have been the friendliest, and we have co-operated on nearly all the bills of a general character that were in the interest of or opposed to the working people. The Brotherhood of Locomotive Engineers, the Brotherhood of Railroad Trainmen, and the Workingmen's Federation, State of New York, besides the Brotherhood of Locomotive Firemen, being represented here during the whole session.

On January 11, 1905, your Chairman reached Albany, and met with your Secretary; we discussed the Employers' Liability Act, upon which we had been instructed, and which we deemed of more importance to our safety and welfare than any and all other bills. Upon the passage of a fair act, holding the employer responsible, would depend more than we can realize, and it would remove nearly all the ills with which we have to contend today, both as an organization and as individuals. Your Chairman had taken this matter up with our General Counselor, J. H. Murphy, on November 21, 1904, and made a request upon him to fix up such amendment to our present law as would fully protect our interest. His reply was not, however, received until after our meeting referred to, he sent us copies of liability acts of several States, together with some good advice and suggestions, but nothing in the shape of an act that we could introduce, so after discussing the same we decided to submit his suggestions to an attorney and have him prepare an act on the lines of Brother Murphy's suggestions. On January 12th we submitted the matter to the firm of McDonough & Dannaher, who prepared our bill.

The Legislature adjourned on the 12th until the 16th. On the 21st of January we received the bill from our lawyer. On January 22d, your Chairman appeared before the Executive Board of the Workingmen's Federation and read our Liability Act to them, and after some discussion it was unanimously indorsed by them, and they agreed to co-operate with us and the B. of R. T. representatives for the passage of this act.

Realizing the fact of the importance of this act and feeling that we should get a man to introduce it in the Senate that comes from a district where a large representation of our men reside as well as the strength and position of such Senator among "the powers that be," we concluded that Senator Hill of Buffalo came closer to these requirements, and our claims upon him would certainly entitle us to consideration from him, so on January 25th your Chairman interviewed Senator Hill, and requested him to introduce our Liability Act. He suggested the changing of a few words in the act, and said to call on him on the 31st of January. Your Chairman has seen our attorney and asked him about the changes suggested by Senator Hill and he advised against the change, stating that it would change the intent of the bill. Your Chairman and Secretary, after talking over the matter, concluded not to change the act, and on the 31st we waited on Senator Hill as per appointment. He then requested us to send a copy of our proposed act to Mr. John Coleman of Buffalo, as Mr. Coleman and the Senator had discussed the bill, and that he (Senator Hill), was guided in his attitude on labor measures by the advice of Mr. Coleman. We wrote Mr. Coleman as requested, informed him that the bill had the indorsement of the Federation, and the B. of R. T., and inclosed copy of the act. We also wrote Brother Hanvey and all our Lodges in Buffalo to see or write Senator Hill, and bring such other influence as they had to bear on him to introduce our act. Senator Hill was absent from the session for two weeks, and we were unable to see him, but inasmuch as we had not received his refusal to handle the bill, and owing to his standing as before stated, as well as our efforts to reach him through our membership in Buffalo, we deemed it unwise to ask anyone else until we had seen him, so on his return on February 13th, we saw him and informed him that we had complied with his request, and submitted the matter to Mr. Coleman; that two weeks had passed, and that no reply had been received from him, and we asked him if he would handle our bill. He stated he had been sick and was not well enough to handle it. It was in our opinion a very poor excuse, and as he introduced and handled any amount of bills after that we feel that after doing all that he requested us to do, and waiting so long for him he did not treat us fairly. He should have been man enough to state to us openly and at once that he would not handle it; he knew when he spoke to us first that he would not do it. As for the approval of Mr. Coleman, a man who once upon a time was connected with the labor movement of the State, we may say this, that we have not heard from him as yet, and we feel that common courtesy on his part as a unionist would at least entitle us to a reply from him.

After our interview and failure to get Mr. Hill to introduce our bill, we requested Senator Lewis of Rochester to introduce it for us, and he agreed at once to do it, but stated he could not promise to get it out of committee for us but would do his best. Senator Lewis introduced our Liability Act on February 14th. The bill was referred to the Committee on Judiciary; it stayed there and died although every effort possible was brought to bear to have it reported out. We have stated as briefly as possible our efforts. You must see and note our opening chapter, and you will see at a glance what we have to contend with.* Correspondence on this bill follows:

ALBANY, N. Y., February 16, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, B. of L. F., State of New York:

DEAR SIRS AND BROTHERS.—Inclosed please find Senate Bill No. 380, introduced by Senator Lewis. An act to relieve employes from assuming the risk of injury or death from dangers in the employment which by exercise of ordinary care the employer might have guarded against. This act is drawn by attorneys here on lines suggested by our general counselor, and has been indorsed by the Executive Committee of the Workingmen's Federation and the Brotherhood of Railroad Trainmen.

Fraternally yours,

R. E. QUIRK,
Chairman.

THOMAS E. RYAN,
Secretary.

Note.—It is admitted that more effort has never been put forth by organized labor in unity than on this bill. It is admitted that more letters and influence reached those who were in charge of it than on any other measure. The members of the Judiciary Committee who allowed the measure to die received them by the thousands.

ALBANY, N. Y., January 31, 1905.

Mr. John Coleman, Corner Huron and Washington Streets, Buffalo, N. Y.:

DEAR SIR.—In an interview with Senator Harry Wayland Hill this morning he informed me that you are desirous of having a copy of the bill which we have requested him to present. I take pleasure in inclosing the same, and also desire to say the bill has been indorsed by the Executive Board of the Workingmen's State Federation, which met here on the 22d of this month. It has also the indorsement of the Order of Railroad Trainmen. Was unable to see Mr. P. J. Hooley this morning, but will request him to write you as soon as I do. In the meantime if you desire you can communicate with Secretary-Treasurer Edward A. Bates, of the Federation, who can inform you of the action taken by their body. You will realize as well as ourself the urgent necessity of having this measure introduced as early as possible. I would, therefore, request an early reply.

We are respectfully and fraternally,

R. E. QUIRK,
Chairman.

THOMAS E. RYAN,
Secretary.
11 Delaware St., Albany, N. Y.

ALBANY, N. Y., February 28, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Senate Bill No. 380, which we forwarded to you under date of February 16th, is now in the hands of the Senate Judiciary Committee.

This bill is of more importance to the railroad employes than any measure now before the Legislature. The object of the bill is to avoid, in certain cases, what is known as "the assumption of risk" by the employe.

As the law now stands in this State if an injury occurs to an employe by reason of some defect in the ways, works, or machinery upon or about which he is employed, the fact that he knew of such defect would bar a recovery, if he failed within a reasonable time to give, or cause to be given, notice thereof to the employer or some person superior to himself in the employment of the employer who had entrusted to him some general superintendency, unless it shall appear on the trial that such defect or negligence was known to such employer or superior person prior to such injuries to the employe. This is particularly applicable to railroad employes and accidents occurring to them.

This proposed law provides that if the

company by the exercise of reasonable care and caution could have remedied the defect or avoided the peril it would be bound to do so, although not notified of the same by the employe, unless it was the principal duty of the employe to repair or remedy such defect or peril. The employe must in any event, himself, exercise due care and diligence.

The effect of this bill must cause the persons in control of the machinery, etc., to exercise greater care in the use thereof so that accidents may not happen because of their negligence in not remedying defects therein. This bill is not unreasonable, but is a fair, honest measure and a step in the right direction.

This bill will have a hearing before the Senate Judiciary Committee, Wednesday, March 8, 1905, and we hope our members and legislative representatives will interest themselves in this measure and use every effort in urging their representatives in Senate and Assembly to secure the passage of same.

We inclose herein copy of resolution adopted by Lodge 71 and forwarded to the Senator and Assemblyman from their district.

We hope all lodges and legislative representatives will adopt similar resolutions and forward them to their representatives in Senate and Assembly as well as to your Chairman of Legislative Board.

We urge immediate action on same.

Fraternally yours,

R. E. QUIRK,
Chairman.

THOMAS E. RYAN,
Secretary.

At a regular meeting of Susquehanna Lodge No. 71, Brotherhood of Locomotive Firemen, the following resolution was unanimously adopted:

WHEREAS, The Hon. Senator Lewis of Rochester, N. Y., has introduced a bill in the Senate of the State of New York, known as Senate Bill No. 380. The object of the bill is to avoid, in certain cases, what is known as "the assumption of risk" by the employe.

Therefore, be it resolved, That we, the members of the Brotherhood of Locomotive Firemen in meeting assembled, do hereby request our Senator and Assemblyman from this district to do all in their power to assist Senator Lewis in securing the passage of the above-named bill:

Resolved, That a copy of this resolution be sent our Senator and Assemblyman, and to Senator Lewis, also to the Chairman of our Legislative Board.

Oneonta, N. Y., February 26, 1905.

(Signed) P. H. KEEGAN,
Master.
J. SPERBECK,
Secretary.

[SEAL.]

ALBANY, N. Y., March 6, 1905.

To the Officers, Members, and Legislative Representatives of the Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—We inclose copies of resolutions adopted by lodges 212 and 99 "and forwarded to their Senators and Assemblymen, favoring the passage of our Liability bill, introduced by the Hon. Senator Lewis."

We again appeal to you to adopt similar resolutions and forward them to your Senators and Assemblymen requesting them to do all in their power to secure the passage of the above-mentioned bill.

This measure the legislative representatives of the several lodges in session instructed us to introduce. It is, therefore, not necessary to wait for a meeting of your lodge to take this action.

We would, therefore, request all secretaries, masters, and legislative representatives to forward resolutions to their Senators and Assemblymen, requesting them to do all in their power to secure the passage of this bill.

Trusting you will take immediate action on this matter and forward us, as well as Senator Lewis, copy of any resolution you may adopt.

Fraternally yours,

R. E. QUIRK,
Chairman.

THOMAS E. RYAN,
Secretary.

ALBANY, N. Y., March 18, 1905.

To the Officers, Members, and Legislative Representatives of the Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—We have under previous dates informed you that our Liability bill No. 380, introduced by Senator Merton E. Lewis of Rochester, N. Y., at the request of the several labor organizations of the State, was in the hands of the Senate Judiciary Committee. We also have appealed to the several lodges and representatives to write their Senator and Assemblyman, requesting them to do all in their power to assist

Senator Lewis in securing the passage of this most worthy measure, and we have good reasons for believing that the majority of our lodges and representatives have done so. "Yet this bill is slowly dying in the hands of this committee."

A hearing was set on the bill for March 8th, and on that date the following organizations were represented in favor of the bill: The Brotherhood of Locomotive Engineers, Brotherhood of Railway Trainmen, Workingmen's Federation of the State of New York, and the Brotherhood of Locomotive Firemen, with an attorney to look after the legal end of the bill. And on that date Mr. Edgar T. Brackett, chairman of said committee, announced when the bill was called, that Mr. Rudd, attorney for the New York Central Railroad, Mr. John B. Stanchfield, attorney for the D., L. & W., and Erie, Mr. Lewis Carr, attorney for the Delaware and Hudson Co., and others wished to be heard in opposition, and they could not be present on this day, therefore, the hearing would be postponed until March 15th, so these gentlemen could be heard.

On March 15th the representatives of the Brotherhood of Locomotive Engineers, Brotherhood of Railroad Trainmen, Workingmen's Federation of the State of New York, and your representatives, with an attorney, appeared before the committee in favor of the bill. The opposition being called, there appeared one man, namely, Mr. Butler, representing the Builder's League of New York city, and his argument was promptly killed by your attorney. Messrs. Rudd, Carr, and Stanchfield did not appear before the committee "at the hearing," but were in the lobby at the time. In fact the only opposition to the bill is the Senate Judiciary Committee, and I might say, the chairman of said committee "for he appears to be the committee."

You will note we had no chance to meet the arguments of those opposing our bill, as they done their work under cover in the lobby and the bill is still in the hands of the committee.

Mr. Edgar T. Brackett, chairman of the committee, after holding a long and private conversation with Messrs. Rudd, Carr, and Stanchfield in the lobby, requested, or rather suggested, that we change our bill and make it as an amendment to the Liability Law of 1892. Our attorney advises us not to, and our general attorney, John H. Murphy, advises us not to do so, and I am of the opinion that Mr. Brackett is not acting in good faith. Now, brothers, what is the law at present and what does our bill do.

First, the assumption of risk doctrine which this bill proposes to modify is cruel and illogical, and in many cases nullifies the rule of law which requires the employer to exercise due care toward the employe.

With the Railroad Commissioners' report showing that there were 2,339 injured and 952 killed on the railroads in this State during the past year, I feel it is only a humane act for the Legislature to pass a law that will protect employes as well as the people of the State.

Our bill provides that if the company by the exercise of reasonable care and caution could have remedied the defect or avoided the peril it would be bound to do so unless it was the principal duty of the employe to repair or remedy such defect or peril.

The effect of this bill will cause the persons in control of machinery, etc., to exercise greater care in the use thereof, so that accidents may not happen because of their negligence in not remedying defects therein. This bill is not unreasonable, but seems to me to be a fair, honest measure and a step in the right direction, and I hope every lodge and representative will again call on their Senator requesting the passage of this bill in its present form. Inclosed you will find a copy of letter that I shall file with the Senate Judiciary Committee, providing it is approved by the rest of the organizations, and I hope you will all do likewise.

Yours fraternally,
THOMAS E. RYAN,
Secretary.

ALBANY, N. Y., March 20, 1905.
Hon. Merton E. Lewis:

DEAR SIR.—In reference to the suggestion of Senator Brackett, relative to Senate bill 380, the undersigned respectfully request your committee to report the bill as introduced.

We do not feel that any serious objection was made to the bill from any one, and that the objection that it ought to be introduced as an amendment to the Employers' Liability bill, we feel is a mere technical objection and ought not to interfere with the progress of the bill in its present form.

We have had the bill, as it now is, presented to our various organizations and they have all indorsed it and we do not now deem it within our province to so change it as to make it an amendment to the Employers' Liability Act, and perhaps thereby do something that would injure rather than improve the law.

Hoping that your committee will see fit to report the bill as introduced by Senator Lewis, we remain,

Very respectfully yours,
R. E. QUIRK,
Chairman.
THOMAS E. RYAN,
Secretary.

Note.—A copy of this was sent to each member of the Judiciary Committee.

ALBANY, N. Y., March 21, 1905.

Hon. Edgar T. Brackett, Chairman Senate Judiciary Committee:

DEAR SIR.—In reference to the suggestion made by you, relative to Senate bill No. 380, the undersigned respectfully request your committee to report the bill as introduced.

We do not feel that any serious objection was made to the bill from any one, and the objection that it ought to be introduced as an amendment to the Employers' Liability bill, we feel is a mere technical objection and ought not to interfere with the progress of the bill in its present form.

We have submitted the question raised that this bill would if it became a law seriously conflict with the present Liability Law to the counselors of our various organizations, and their opinion is that it would not conflict, but, to the contrary by making it as an amendment to the present law it would cause a vast amount of trouble, and seriously endanger the usefulness of the present act.

We have had the bill, as it now is, presented to our various organizations, and they all indorsed it, and we do not now deem it within our province to so change it as to make it an amendment to the Employers' Liability Act, and perhaps thereby do something that would injure rather than improve the law.

Hoping that your committee will see fit to report the bill as introduced by Senator Lewis, we remain,

Very respectfully,
A. W. YOUNG,
For the B. of L. E.
R. E. QUIRK,
For the B. of L. F.
P. J. HAYES,
For the B. of R. T.
P. J. HOOLEY,
For the Workingmen's Federation.

Note.—A copy of this was sent to each member of the Judiciary Committee.

Resolutions adopted by Empire Lodge No. 212 of Watertown, N. Y.:

WATERTOWN, N. Y., Feb. 28, 1905.

Hon. G. H. Cobb, Senator 35th Senatorial District, Albany, N. Y.:

DEAR SIR.—Our Liability bill No. 380 is to be presented to the Judiciary Committee, and you being one of that committee, the members of Lodge No. 212, Brotherhood of Locomotive Firemen, ask you to support this bill. We are anxious to have it passed and would be pleased to know that the Senator from the 35th would do what he could to help us.

This letter is to be spread on the minutes of our meeting, and should you support the bill it will be highly appreciated and cheerfully reciprocated should the opportunity present itself.

Thanking you in advance for expected favors, we are,

Yours very truly,
C. E. GREEN,
Secretary,
C. E. ANDERSON,
Master.
THOMAS H. LYNCH,
L. B. Representative.

[SEAL.]

Resolutions adopted by Lodge No. 99, B. of L. F.:

WHEREAS, The Hon. Merton E. Lewis, Senator from this district, has introduced a bill in the Senate of the State of New York, known as Senate bill No. 380. "The object of this bill is to avoid in certain cases what is known as the assumption of risk" by the employe.

Therefore, be it resolved, That the members of Rochester Lodge No. 99, of the Brotherhood of Locomotive Firemen in meeting assembled, do hereby request our Senators and Assemblymen from this county to do all in their power to assist Senator Lewis in securing the passage of this bill.

Resolved, That a copy of this resolution be sent to our Senators and Assemblymen, and to Senator Lewis, also to the Chairman of our Legislative Board.

(Signed.)
W. FRANK FINCH,
Master.
W. P. COUCH,
Secretary.

[SEAL.]

At a regular meeting of Troy City Lodge, Brotherhood of Locomotive Firemen, the following resolution was unanimously adopted:

WHEREAS, The Hon. Senator Lewis has introduced a bill in the Senate of the State of New York, at the request of the railroad employes of this State, known as Senate bill No. 380. The object of the bill is to avoid in certain cases what is known as "the assumption of risk" by the employe.

Therefore, be it resolved, That we, the members of the Brotherhood of Locomotive Firemen in meeting assembled, do hereby request our Senator and Assemblymen from this district to do all in their power to assist Senator Lewis in securing the passage of the above-named bill.

Resolved, That a copy of this resolution be sent our Senator and Assemblyman, and to Senator Lewis, also to the Chairman of our Legislative Board.

Green Island, N. Y., March 12, 1905.

P. H. McGAN,
Master.
W. LIVINGSTON,
Secretary.

[SEAL.]

(To be continued in August Magazine.)

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Miscellany

Russo-Japanese War.

The recent defeat of the Russian navy by the Japanese Admiral, Togo, in the Straits of Korea ranks as the greatest naval victory in history. That the engagement was fought under conditions of the greatest development in guns and armament constitutes one of the principal considerations entitling it to this distinction, although it is doubtful if a more complete victory has ever been gained by one antagonist over another than that which was achieved by Togo over Rojestvensky. As the world awaited the struggle, the impression generally prevailed that the naval forces were about evenly matched, many leaning to the conviction that the Russian squadron possessed some advantages over the Japanese naval force waiting to engage it. That this was true in the matter of tonnage and the total number of ships and guns developments have demonstrated, but "the man behind the gun" on the Russian vessels was vastly inferior in discipline and training to his opponent on the fighting ships of Japan, and this was the essential disadvantage which cost Russia her armada and all the loss of prestige, indemnity and territorial privileges in the far East which is certain to ensue as a direct result of her overwhelming defeat in "the Battle of the Sea of Japan."

The American naval victories during the Spanish war made it clear to the world that thorough training and discipline on the part of a battleship's fighting forces is just as essential in naval warfare as is the use of the best obtainable armament and fighting machinery. As evidence of the lack of discipline and inferiority in the fighting capacity of the forces under Rojestvensky it can be stated that after the first Russian reverses at Port Arthur the Czar, in despair, ordered him to organize a fleet, take it to the far East, and make an effort to wrest the supremacy of the seas from the victorious Japanese. This command was given Rojestvensky by virtue of the fact that he was at that time chief of the staff of the Russian navy.

Rojestvensky accepted the task with reluctance, for, having been chief of the naval staff for more than a year, he knew the almost hopeless nature of the undertaking.

First, Rojestvensky had to organize a fleet. Many of the warships at his disposal were new, but incomplete. He had but few officers. He had no crews.

Rojestvensky assembled a fleet of fifty or more warships, colliers and transports. He secured officers—taking some, it is declared, from cavalry regiments. He enlisted 18,000 men—many of whom had never been aboard anything more formidable than a ferryboat.

The great majority of the sailors on board the Russian ships were recruited from the very lowest walks of Russian life, being for the most part peasants, and many of them had been drafted for service but a comparatively short time before the fleet sailed for the East in October last. Advices state that one portion of the squadron thus organized by Rojestvensky was manned by infantry from the Russian army and officered by inexperienced court pets. From the foregoing it is safe to conclude that "the Battle of the Sea of Japan" can not, therefore, be regarded as a test between battleships and guns, but rather a demonstration of the general inferiority of a navy, regardless of its magnificence in strength and equipment, unless the men that constitute its fighting force be thoroughly efficient in target practice and discipline.

In addition to the inferiority of the Russians in this particular, another circumstance that contributed very materially to their utter demoralization was the fact that they were taken completely by surprise, accounts of the battle stating that their squadron was steaming peacefully along, enveloped in a fog; that there was no sign of the Japanese fleet and the Russian ships were not cleared for action, nor were the batteries manned. The attack came with a suddenness that made the unpreparedness of the Russians for battle a glaring mistake that never could be corrected.

Two lines of torpedo boats suddenly appeared and encircled the Russian fleet. The rapid fire batteries were turned loose, but with apparently little effect on the Japanese boats. Over the approaching torpedo boats came a hail of ten and thirteen-inch shells from the Japanese war vessels in the distance. The torpedo boats advanced at full speed, one division going in a westerly and another in an easterly direction. The Russian cruisers and battleships prepared to repel the attack. The cruisers manned their port batteries and the battleships their starboard batteries. No attempt was made to prepare the batteries on the other side of the ships, and it was here the Russians blundered.

When the Japanese torpedo boats came within firing distance the Russians opened fire. Then it was the Japanese executed a maneuver that threw the Russians into confusion. The two encircling lines met south of the Russians, but instead of continuing in that direction they turned at a signal from Togo, and at full speed charged between the three lines of Russian ships, one division passing between the cruisers and the line of hospital ships and transports, and another division passing between the transports and the battleships on the other side. The Russian ships were unprepared for an attack of this character, and for a time were helpless against the discharge of Japanese torpedoes. Hardly a cruiser or battleship remained unscathed. The Russians were completely demoralized, and during the last dash of the torpedo boats not a shot was fired to stop them.

In the meantime, Togo, with his battleships and cruisers, encircled the Russian fleet, and with his big guns completed the work of destruction.

In discussing the fight a Japanese naval expert is credited with the following analysis, which is a confirmation of the foregoing:

"First. An imperfect reconnoissance and incomplete, faulty and misleading intelligence.

"Second. An imperfect battle formation, which indicated that Rojestvensky did not expect to meet Togo off Tsushima.

"Third. The weather, the direction of the wind and the sunlight were unfavorable to the Russians, Togo having the sun behind him and firing with the wind, while the Russians had the sunlight in their eyes and fired against the wind.

"Fourth. The Russians wasted their ammunition, and eventually their supply ran short. It is believed that the surrender of Nebogatoff was necessary because his ammunition had been expended.

"Fifth. The marked inferiority of the Russian gunnery."

Another opinion is as follows:

"It is difficult to explain these wonderful results. Without doubt, the personnel of the Japanese crews was vastly superior to that of the Russian crews. The Japanese sailors were better men to begin with, and then they had been better taught and had been through the valuable school of experience. While the Russian ships were the equal, if not the superior, of the Japanese vessels, the fact remains that they had traveled over seventeen thousand miles for this fight. The Japanese ships, on the other hand, had recently been overhauled and were near their naval base of Masampa."

The brutality of herding several thousand untrained men into battleships and bringing them to certain destruction demonstrates the utter disregard and lack of feeling entertained by bureaucratic and autocratic governments for the poor human tools upon which they depend for power wherewith to maintain their supremacy and exercise their authority in oppressing the people whom they assume to govern. It is not at all surprising that insubordination should prevail amongst such men, conscious as they were of their own inefficiency to meet a wily foe, thoroughly experienced and efficient in the art of naval warfare, and that, according to advices from reliable sources, there were "several outbreaks amongst the sailors constituting Rojestvensky's squadron, not only on account of their being forced to serve against their will, but also on account of the poor food supplied them and other ill-treatment to which they were subjected. It is reported that every prison on the ships was filled with mutineers, who were released only just before the battle began, and that when Admiral Nebogatoff surrendered the vessels in his squadron the sailors broke out in an open revolt.

They smashed everything at hand which could be broken and raided the officers' cabins. It was not until after the Japanese had boarded the vessels that order was restored.

This incident, together with a realization of the additional slaughter that is bound to result from a continuation of the war, has led humanity in general to hope and pray and plead for an end to the war.

Notwithstanding that the task of opening the way for peace negotiations between the belligerent powers constituted one of the most delicate and complicated diplomatic tasks that has ever been undertaken, President Roosevelt has succeeded in arranging all the preliminaries. None can appreciate this great act of mercy as deeply as the anxious and suspense-torn hearts in Russia and Japan, to whom a continuation of hostilities may, and in so many cases surely will, if the fighting continues, mean death or horrible suffering, or both. President Roosevelt as a result of his success in initiating peace proposals has gained for himself and his country the approbation of the world, and for years to come the loved ones of those whose lives have been perpetuated through his brave, manly, humane and gigantic stroke of statesmanship will bless the name of Roosevelt. The President's peace message to the governments of St. Petersburg and Tokio, which was delivered through the American Ambassadors at St. Petersburg and Tokio, to the Emperors of Russia and Japan, after the President had held conferences at Washington with the Russian and Japanese Ministers, Count Cassini and Takahira, and which, in contemplation of the magnitude of its results, will be recorded as one of the most important documents in history, is as follows:

"The President feels that the time has come when, in the interests of all mankind, he must endeavor to see if it is not possible to bring to an end the terrible and lamentable conflict now being waged. With both Russia and Japan the United States has inherited ties of friendship and good will. It hopes for the prosperity and welfare of each, and it feels that the progress of the world is set back by the war between these two great nations. The President accordingly urges the Russian and Japanese governments, not only for their own sakes, but in the interest of the whole civilized world, to open direct negotiations for peace with each other. The President suggests that the peace negotiations be conducted directly and exclusively between the belligerents; in other words, that there be a meeting of Russian and Japanese plenipotentiaries or delegates, without any intermediary, in order to see if it is not possible for these representatives of the two powers to agree on terms of peace. The President earnestly asks that the Russian government do now agree to such meeting, and is asking the Japanese government likewise to agree. While the President does not feel that any intermediary should be called in in respect to the peace negotiations themselves, he is entirely willing to do what he properly can if the two powers concerned feel that his services will be of aid in arranging the preliminaries as to the time and place of meeting. But if even these preliminaries can be arranged directly between the two powers, or in any other way, the President will be glad, as his sole purpose is to bring about a meeting which the whole civilized world will pray may result in peace."

The foregoing is regarded by prominent statesmen and diplomats as being one of the most admirable state papers ever constructed, and, far from giving offense, it has been accepted in the most kindly spirit by the people, as well as the governments, of the countries to which it was directed. As its direct result, arrangements have been finally concluded for a meeting in Washington of plenipotentiaries of Japan and Russia, which it is confidently believed will culminate in a reconciliation between the two nations.

Many opinions have been expressed as to the conditions upon which Japan, who in this terrible conflict has been continuously victorious, will consent to a cessation of hostilities, but intimations come from reliable sources to the effect that the Tokio government, with a view to maintaining the prestige and commanding the respect and confidence of other nations, will surprise the world by the moderation of her demands upon Russia, and thereby demonstrate the justice of the cause for which she originally went to war and her magnanimity in refraining from taking undue advantage of a conquered foe.

One of the results of the war thus far has been a reclassification of the sea fighting strength of the naval powers of the world. The Naval Intelligence Bureau at Washington states that the "Battle of the Sea of Japan" has put the United States up from fifth to fourth place, and Germany from fourth to third. The naval powers now range in this order:

Great Britain, France, Germany, United States, Italy, Japan, Russia and Austria.

Prior to the Battle of the Sea of Japan they ranked as follows:

Great Britain, France, Russia, Germany, United States, Italy, Japan and Austria. Austria is the only power whose rank is unaffected by the battle.

Italy moves from sixth place to fifth.

Great Britain's tonnage is 1,595,871, France's 603,721, Germany's 441,249, that of the United States 316,523, Italy's 254,510, Japan's 252,661, Russia's (which formerly was 447,315) is now 227,343. Austria comes last with 112,336.

Practically all Russia has left is the Black Sea fleet. Of her 19 battleships only seven remain; of her 11 coast defense vessels, including smaller battleships and monitors, only seven; of her seven armored cruisers, three: of her 20 other cruisers, 15; of her 41 torpedo boat destroyers, 33; of her 85 torpedo boats, 82.

The question of an armistice pending the conducting of peace negotiations has not yet been decided. The very near future will no doubt bring a cessation of actual hostilities. Notwithsanding this, however, extensive preparations for continued fighting will go on uninterruptedly. Both nations will continue to reinforce their armies at present in the field with men, provisions and fighting material, and every advantage will be taken of the time allowed to make each force the more effective. It is to be hoped, however, that the signing of the armistice papers may mean that the war has permanently ended.

Protect the Babies' Health.

The great importance of protecting health in general, but that of babies in particular, owing to their helplessness, can not be overestimated. Experience has proven to many the truth of the old statement that an ounce of prevention is better than a pound of cure. The following "Precautions Against Cholera Infantum" is the subject of one of the many circulars treating on health matters which have been given out for publication by the Indiana State Board of Health.

Precautions Against Cholera Infantum.

Summer complaint (cholera infantum) kills an appalling number of infants every year. In the warm months reports from physicians tell of the awful slaughter. About one-twentieth of all the deaths for the entire year can be credited to diarrhœal trouble.

CAUSE OF SUMMER COMPLAINT.

The trouble attends continued high temperature. Excessive heat, long endured, profoundly affects the nerves. Fretfulness (nervousness) always precedes attacks of cholera infantum. Digestion is depressed by nervousness, and then, if the child happens to overeat or to be fed unwholesome food, it quickly develops the dread disease. The ferments (microbes), which always exist everywhere in everything, and which are unusually active in hot weather, only wait for an opportunity to multiply and elaborate their poisonous products, which cause cholera infantum, diarrhœa, dysentery, etc.

PRECAUTIONS.

First.—Keep the infant clean and cool by frequent bathing in tepid water, and give it plenty of cool boiled water to drink. Give considerable time and pains to this, for it probably will do away with the necessity of giving all of your time, plus a great deal of anxiety, to the sick infant. All too frequently infants do not have enough water to drink and cry and are sick because of thirst. If the infant is fed at the breast, the mother should take the very best care of herself. She, too, should keep clean, cool and quiet. If the mother is worried, overheated, nervous, feverish, or exhausted with work, her milk is unfit food, and if given to the baby there will be two sick, instead of one.

If the baby is fed artificially be sure first to use only a *plain bottle* with a *plain nipple.* Keep it clean and sweet with scalding water and ordinary baking soda. *Do not use feeding bottles with long rubber tubes unless you wish to invite indigestion, bowel trouble,* and perhaps death. The milk should be from healthy cows, collected with *scrupulous cleanliness,* cooled, if possible, in ice water, immediately after it is taken from the animal, and kept covered in a cool place. Dirty cows, dirty barnyards, dirty hands, dirty cellars and dirty refrigerators kill more infants every summer than any other cause. The battle cry against cholera infantum is CLEANLINESS, CLEANLINESS, CLEANLINESS.

Infants need water to drink as much as adults. Give them water, but *be sure to boil and cool it beforehand.* Don't trust your well, especially if it is a dug well, for ten to one it is polluted. Take the trouble to boil the water; the interest on the investment is very high. Keep the baby in the open air in the shade, and let it wear a flannel bandage around the stomach. If your child is suddenly seized with diarrhœa or frothy vomiting, stop its milk at once and feed it on raw white of egg, gelatine and perfectly fresh meat or chicken broth; and do not give milk again until the diarrhœa has stopped. Never try to treat looseness of the bowels in a baby yourself in hot weather, but send at once for a doctor.

Send for Circulars.

The Indiana State Board of Health has been exceedingly active in urging, and, as far as possible, enforcing health precautions throughout the limit of its jurisdiction. Under the management of its able secretary, Dr. J. N. Hurty, it has accomplished much in this direction Dr. Hurty, in his zealous desire to save his fellow-man from the scourge, sorrow and trouble of sickness and disease, desires through the columns of the Magazine to notify its readers that he will send free to "*any one*" circulars which tell about the prevention of consumption, diphtheria, scarlet fever, typhoid fever and smallpox, and also a sickroom card which gives directions for the management of the sickroom.

When writing for any of the foregoing circulars address Dr. J. N. Hurty, Secretary of the State Board of Health, Indianapolis, Ind.

Some Simple Health Rules.

The following are some excellent general health rules which everyone should, as far as possible, endeavor to follow:

1. Be regular in your habits.
2. If possible go to bed at the same hour every night.
3. Rise in the morning soon after you are awake.
4. A sponge bath of cold or tepid water should be followed by friction with towel or hand.
5. Eat plain food.
6. Begin your morning meal with fruit.
7. Don't go to work immediately after eating.
8. Boil and filter all drinking water.
9. Exercise in open air whenever the weather permits.
10. Keep the feet comfortable and well protected.
11. See that your sleeping rooms and living rooms are well ventilated.
12. Sleep with your windows open and door shut.

While it is, of course, out of the question for nearly all men engaged in train service to get regular sleep, conditions governing their employment should always be such as to permit of their securing ample rest between trips, as sleep sufficient to comply with nature's demands is essential to the preservation of health. Friction after bathing in cold or tepid water is necessary to revive circulation in the small blood vessels of the skin in which congestion always results from the application of cold water. This friction stimulates circulation as well as the action of the pores and, regardless of the temperature of the water, is always beneficial. When cold water, however, is used in bathing a vigorous rubbing of the skin should always follow immediately after the bath as its omission is in many cases very liable to prove injurious.

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Industrial Notes.

Current advices state:

That the cigarmakers are happy over the fact that the internal revenue authorities have decided that the Cigarmakers' Union label can be put on boxes in any place or manner, just so they do not cover the internal revenue stamp or factory mark, the caution required by law. The tobacco trust tried to prevent the use of the label on boxes of union-made cigars.

That one of the most encouraging signs of the labor movement is the tendency of the ministers of the Gospel everywhere to interest themselves in the organizations intended to elevate the toiling masses.

That a representative of the Western Federation of Miners attempted to secure permission to address the Texas State Federation of Labor at the Denison convention recently. The convention by unanimous vote refused to grant the floor.

That, alleging as the cause of its apparently radical actions its unwillingness to pay the increased wage scale demanded by the members of the Amalgamated Iron, Steel and Tin Workers, the American Sheet and Tin Plate Company, of Pittsburg, decided to close most of its principal mills on or about June 15.

That Cornelius J. Nolan, one of the managers of the Libbey glass factory, has invented a glass-blowing machine that will blow incandescent light bulbs. That the hardest sort of tests have been given the machine and it has proven its worth steadily, standing every test. The Nolan machine may work havoc among the glass blowers who are employed on incandescent light bulbs.

That the New York City Contractors' Protective Association has declared a lockout of the Rockmen and Excavators' Union, and between 10,000 and 12,000 men working on more than 100 buildings and other contracts have been thrown out of work.

That P. J. McArdle, of Muncie, Ind., has been elected president of the Amalgamated Association of Iron, Steel and Tin Workers on the second ballot, vice Theodore Schaffer, former President.

That James E. Roderick, Chief Inspector of Mines in Pennsylvania, has ordered a test of all the lifting appliances in the anthracite region, to insure against a repetition of disasters by which many lives have been lost recently.

That the leader of the delegation of unemployed army bootmakers, which recently marched to London, Eng., was ejected from the House of Commons upon attempting to address that body from the Speaker's gallery.

That the convention of the American Federation of Musicians, at Detroit, Mich., adopted a resolution asking Congress to increase the pay of first-class musicians in the United States Army to $34 per month.

That the strike of the 14,000 agricultural laborers in Porto Rico has ended, according to a cablegram received by President Gompers, of the American Federation of Labor, from Santiago Inglesias, the organizer of the Federation. The strikers secured an advance in pay of 30 cents a day and nine hours.

That the French Government employs 17,149 people in its state tobacco factories. The great majority are women.

That the national demonstration in favor of the British unemployed bill is now being organized by James Keir Hardie, independent member of Parliament, and other labor leaders.

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Humane Legislation.

In an article published in the March issue of the Magazine relating to the cruel practice of shooting live pigeons from traps, it was stated that the enactment of legislation was being sought in Illinois by humane societies and humanely disposed individuals to prohibit this so-called sport.

The Magazine is pleased to announce that such a law has been enacted, and that Illinois has taken her place with the many other States in the Union which are determined to put a stop to such cruelty. This law takes effect on July 1, 1905, and provides a penalty of from $20 to $100, or imprisonment in the county jail not exceeding thirty days, for its violation.

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BROTHERHOOD OF

LOCOMOTIVE FIREMEN'S MAGAZINE

BROTHERHOOD DEPARTMENT

Grand Union Meeting to be Held in Canada.

In a notice appearing elsewhere in this issue it is officially announced that a GRAND UNION MEETING will be held in Toronto on August 8, 9, 10, 1905, and a cordial invitation extended to all members of the Brotherhood throughout the United States, Canada and Mexico to be present. It is further announced that the Canadian Pacific and Grand Trunk Railways will grant transportation to members of the Order desiring to attend, when requests are made through the proper officials of their own roads. Special rates, which will be announced later in the Magazine, are being arranged for with the hotels.

The officers of the meeting give the promise in this announcement that "everything will be done to make your visit pleasant." To those who have already experienced the entertaining accomplishments of the Canadian brothers an assurance of this kind is unnecessary. Everyone present at the Toronto Convention in 1898 will always remember that occasion as one of the most pleasant incidents of their lives.

A visit to the beautiful, progressive and well-governed city of Toronto, without any other attraction whatever, is in itself a treat long to be remembered. In addition to this, however, comes the assurance of experiencing the genuine Canadian hospitality for which its residents in general, and our boys in particular, are so renowned, as well as of deriving the pleasures and advantages to be gained from the meeting itself. It is safe to say that all who can possibly arrange to go and fail to do so, are depriving themselves of one of the most pleasant experiences they can enjoy. Those who do attend will, without question, find the time and effort expended in so doing a most valuable investment. Practical personal experience impels the assertion that should any brother or sister present in Toronto during this gathering fail to enjoy himself or herself to the limit, it will not be the fault of the Toronto boys, for in their midst warm good will and the most genuine fraternalism reign supreme.

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Conventions of Other Orders.

During the month of May last three of our sister organizations held conventions—the Order of Railway Conductors, at Portland, Oregon; the Brotherhood of Railroad Trainmen, at Buffalo, N. Y., and the Switchmen's Union of North America, at Indianapolis, Ind. The three gatherings, both in the number of delegates attending and in the enthusiasm and energy displayed in their work, indicated most satisfactory progress and development on the part of the organizations represented. The grand officers of the Order of Railway Conductors and Brotherhood of Railroad Trainmen were all re-elected to office, and those of the Switchmen's Union, with one or two minor exceptions, also succeeded themselves. In the case of the Order of Railway Conductors and the Brotherhood of Railroad Trainmen new offices were created, the first providing for an additional Assistant Grand Chief Conductor, to be appointed by the Grand Chief Conductor, and whose work will be confined exclusively to Canadian territory; and the latter for an Assistant Grand Master, thereby necessitating the election of an additional Vice Grand Master.

The next conventions of these organizations will be held in May, 1907, as follows: Order of Railway Conductors at Memphis, Tenn.; Brotherhood of Railroad Trainmen at Atlanta, Ga., and the Switchmen's Union of North America at Detroit, Mich.

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Good Will That Is Thoroughly Reciprocated.

En route from the convention of the Brotherhood of Railroad Trainmen recently held at Buffalo, Grand Master Hannahan visited the Magazine office and expressed unusual pleasure and gratification at the result of his visit to the Seventh Biennial Session of our sister organization's Grand Lodge. He spoke in the highest terms of the personnel and magnificent attendance of the delegates, and expressed the deepest appreciation of the enthusiastic reception and kind treatment accorded him by Grand officers and delegates alike while their guest. Bro. Hannahan accepted the kind and cordial treatment extended to him on the occasion as most pleasing evidence of the depth of sincere and mutual good-will, unwavering loyalty and unfaltering friendship which characterizes the relations which at present and have always in the past existed between the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen, the same sentiment which is also evinced on every occasion that the Grand Master of the B. of R. T. visits one of our own conventions.

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To the Secretaries of Joint Protective Boards—Important.

Owing to the fact that the names and addresses of the present officers of several of our Joint Protective Boards have not been reported to the Editor of the Magazine since their election, the names of their predecessors continue to appear in the Directory. The result is that much confusion, annoyance and delay is experienced by all persons who, being desirous of reaching such boards or their officers by letter, are dependent on the Directory for their names and addresses. Considerable complaint has reached the Magazine office about this condition of affairs, and urgent letters have been received asking that it be remedied. All Secretaries of Joint Protective Boards are, therefore, earnestly requested to forward a correct list of the names and addresses of the Chairman, Vice Chairman, Secretary and Treasurer of their respective Boards so that all of the rosters at present appearing in the Directory can be corrected or verified.

Complaints also have been received to the effect that Joint Boards which have long since gone out of existence still appear in the Directory. These Boards, having consolidated with others representing the systems absorbing their particular lines, no longer exist, and their continued presence in the Directory is, therefore, very misleading. It is to be hoped that the Secretaries of the Boards with which they have consolidated will kindly notify the Editor, so that the necessary changes in the Directory can be made accordingly.

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I'm In Off the Road Today, Boys.

The following was written by Bro. F. W. Hammill, of Lodge 673, Harrisburg, Pa., on his deathbed, and, through Bro. U. M. Bailey, Secretary of his lodge, he has sent a request for its publication, with which the Editor respectfully and cheerfully complies:

So this is the story I am going to tell:
  I am sick to the bed, boys,
And don't know when I will get well.
  The doctor said I had a close shave,

But still I lay here and try to be brave,
  For I have still things to fight for,
An aged mother and a young wife,
  Who are the dearest to my life.

I am a member of Lodge 673.
  Dear brothers and sisters have been to see me,
To extend a helping hand and to cheer
  And tell me not to worry for they will help.

I can not explain the gratitude as I would,
  But when I am better I will cheer
And help as others have helped me,
  And try to extend the hand that was extended to me.

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Back Numbers of the Magazine.

Back numbers of the Magazine can be secured from the parties whose names and addresses are given below:

Chas. Burkett, 124 West Eighth street, Covington, Ky., has the following copies:

1889, October, November, December; 1890, 1891, complete; 1892, complete except November; 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, complete.

C. F. Conrad, Richford, N. Y., has the following copies:

1901, 1902, 1903, 1904, complete.

C. G. Brockhurst, 100 Smith street, Buffalo, N. Y., has the following copies:

1898, 1899, 1900, 1901, 1902, 1903, 1904, complete.

E. B. Riley, care of Y. M. C. A. North Fond du Lac, Wis., has the following copies:

1899, December; 1900, June, July, August, December; 1901, January, February, March, May, June, August, September, October, November, December; 1902, January, February, March, April, May, June, August, October; 1903, January, February, March, April, May, July, September, October, November, December; 1904, complete except December.

Mrs. Laura E. Work, 426 South Erie street, Massillon, Ohio, has the following copies:

1891, October, November, December; 1892, January, February, May, July, August; 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, complete.

D. J. Mahoney, 11 Fairmount street, Rochester, N. Y., has the following copies:

1900, October, November, December; 1901, 1902, 1903, 1904, complete.

Henry Herman, 9 Fairlawn avenue, Middletown, N. Y., has the following copies:

1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, complete.

Any one desiring any of the copies designated above, will please correspond with the parties direct.

The following is a list of back numbers now on hand at the Magazine office, and which will be sent direct on receipt of the usual remittance of 15 cents per copy.

1892—March 1, July 1, December 1.
1893—January 2, February 1, March 3, April 2, May 2, June 2, July 2, August 1, September 2, October 2, November 2, December 1.
1894—March 1, April 1, May 1, June 1, July 1, August 1, September 1, December 1.
1895—January 1, February 1, March 1, April 1, May 1, June 1, July 1, August 1, November 1, December 1.
1896—January 1, February 1, March 1, April 1, May 1, June 1, July 1, August 1, September 2, October 3, November 4, December 1.
1897—January 1, February 1, March 3, April 1, May 3, July 1, August 1, November 1, December 1.
1898—January 1, February 1, March 1, April 1, May 1, June 1, July 1, August 1, October 1, November 1, December 1.
1899—January 1, February 1, March 1, April 1, May 1, June 1, July 8, August 1, September 1, October 1, November 1, December 1.
1900—January 1, March 1, April 1, May 1, June 1, July 1, August 1, September 1, October 1, November 1, December 1.
1901—January 2, February 5, March 9, April 6, May 4, June 5, July 8, August 6, September 3, October 7, November 4, December 3.
1902—January 1, February 4, March 4, April 5, May 1, June 1, July 1, August 1, October 11, November 1, December 1.
1903—January 1, February 4, March 18, May 1, July 1, November 5, December 1.
1904—February 5, March 2, April 1, May 1, June 6, July 20, September 27, October 30.

Sparks.

Mrs. John D. Carpenter, of Elmira, N. Y., writes the Magazine office thanking the members of Lodge 242 for their kindness to herself and family during their recent bereavement in the death of her husband, John D. Carpenter: also for the beautiful floral offerings received.

Bro. H. E. Cook writes the Magazine office that Lodge 287 is in a very prosperous condition and that they are taking new members in at almost every meeting.

Attention is called to Section 47a of the Constitution, which says: "It shall be the duty of every member to notify the Magazine Agent of his lodge or the Editor and Manager direct of any change in his address or failure to receive his copies of the Magazine, and if such notice is not received by the Editor and Manager within thirty days, duplicate copies of missing numbers can not be supplied." Letters are still being received at the Magazine office stating the writers have not received their Magazine for some months, and requesting that the back numbers be sent them. Upon investigating such complaints it is almost invariably discovered that the trouble is due to the fact that they have changed their address without notifying the Editor. A line or two on a postal card sent at the proper time will save all this trouble. If you change your address please notify the Editor promptly, so as to insure your receiving your Magazine without interruption.

Read the advertisements and answer the advertisers.

The Toronto GRAND UNION MEETING will be held on August 8, 9 and 10. Transportation can be secured by our members over the Canadian Pacific and Grand Trunk Railways if applied for through the proper officials of the roads on which they are employed. Application should be made as early as possible.

At a recent meeting of Lodge 386, resolutions of sympathy and condolence were adopted on account of the death of Bro. Mark A. Baird of that lodge.

The Cornish Organ Company, of Washington, N. J., is a continuous advertiser in our Magazine. When purchasing a musical instrument for your home it pays to buy the best you can secure. Something of the excellence of the Cornish pianos and organs may be learned from the fact that the Cornish Company are constantly shipping their excellent instruments to Australia, New Zealand, South Africa, China, the East and West Indies, and even to Iceland and Finland, and the voluntary testimonials concerning their goods which have come to them from these far-away lands amply substantiates the praise which the Cornish instruments have earned in our own country. If you have no piano in your home, you should have one by all means, and you should not buy until you have investigated the merits of the Cornish instruments. The Cornish Company will gladly send you catalogues, testimonials and other information concerning their goods, free on request.

Lodge 651 gave its second annual ball on Monday evening, May 29, 1905. Bro. Albert Simon, the Secretary, writes the Magazine office that it was a grand success, both socially and financially.

Those who visit the Toronto GRAND UNION MEETING on August 8, 9 and 10 will enjoy three of the pleasantest days of their lives.

The Hilker-Wiechers Manufacturing Company with this issue of the Magazine begin a series of full-page advertisements of their famous "Signal" overalls, commonly known as the "Double-Header" brand. This last name has been applied to these goods because of the fact that the entire front of the overalls is made of two thicknesses of the cloth. There is no need for wearing a "gunny-sack" for an apron while firing a "battleship," to keep the overalls from becoming burnt through in a short time. It is evident that our readers have given their patronage to the Hilker-Wiechers Company freely for the past two years, during which time the half-page space only was used. We hope their increase to a full page will be fully merited by their returns from the increased expenditure with our Magazine.

Don't fail to read the "EXTRAORDINARY PREMIUM OFFER" in the advertising columns. Others are securing these useful and beautiful articles—why not you?

In notifying the Editor of your change of address please state, in addition to your new address: First, the number of your Lodge; second, your former address; third, the office you hold, if any, in your Lodge or on your Local or Joint Protective Board.

Every railroad man needs a good and durable pocketbook and card-case. Bro. U. S. Dundon, of Freedom, Pa., manufactures goods in this line and offers them for sale through the advertising columns of our Magazine. While Brother Dundon is not a member of our organization, he is a member of the organization representing his craft, the Brotherhood of Railway Trainmen, and his goods are manufactured by union labor. He certainly is deserving of the patronage and support of our members, and equipped with one of his Acme cases there is little danger of your losing your traveling card or other valuable documents. Write to Brother Dundon for one.

The committee arranging for the Toronto UNION MEETING, which will be held on August 8, 9 and 10, promise a most pleasant and interesting time to everybody. Full particulars given elsewhere in this issue.

Please give the number of your Lodge—your old address—the office you hold, if any, in your Lodge or on your Local or Joint Protective Board, in addition to your new address, when sending in notification of your change of address.

Every month the advertisement of Larned, Carter & Co. furnishes new evidence of the excellence of their "Headlight" overalls, for in each succeeding advertising design which they publish they bring out a new, strong and convincing testimonial as to the value of their goods. They not only give these testimonials, but make them artistic and readable by appropriate illustrating, and show portraits of the men who say they have found the "Headlight" overalls to be all right.

Are the engineers, conductors and brakemen of your acquaintance taking the Magazine. If not, call their attention to the valuable information it gives on locomotive running and repairs, train rules, air brakes, etc., etc., and get their subscriptions.

All changes of address, in order to take effect with the issue of the month following, must reach the Magazine office on or before the eighteenth of the month.

Have you purchased a bath equipment from the Allen Manufacturing Company, of Toledo, Ohio? In these days of hot and dusty runs there is no luxury so charming as an invigorating bath; in fact, convenience and facility in bathing is a necessity to the locomotive engineman. The Allen appliances are thoroughly efficient, and at the same time inexpensive, and what is still better, they are advertised in our Magazine. Read their announcement and write to them.

If there is any trouble in the delivery of your Magazine owing to imperfect address or for any other reason, kindly notify the Editor and the matter will be given his immediate attention. A postal card is all that is necessary to do this.

With a view to facilitating the work of building up the subscription list of the Magazine, the Buffalo Convention provided for the appointment of Magazine Agents, as per Section 47a of the Constitution, which says, in part: "It shall be the duty of the Master of each subordinate lodge to appoint a member of that lodge to act in the capacity of Magazine Agent therefor, and when more than one system of railway is represented in the membership of a lodge, additional Magazine Agents may be appointed for each system. It shall be the duty of the Magazine Agent to solicit subscriptions, receiving his commission therefor." Thus far comparatively few Magazine Agents have been appointed. It is to be hoped that the Masters of subordinate lodges will kindly comply with this provision of the Constitution in the near future, so as to permit of the earliest co-operation of the Magazine Agents in the effort being put forth to raise our Magazine's subscription list to the highest figure possible.

The Continental Casualty Company, of Chicago, enters upon another year's advertising of their accident insurance among railway employes, with this issue of the Magazine. This company is capitalized at $300,000.00, and has built up an enormous business on the leading railway systems throughout the country. Over $5,000,000.00 have been paid to policy-holders.

It has been the practice of many of the readers of the Magazine to request changes of address after the twentieth of the month. Inasmuch as the mailing list is closed every month on that date it is impossible to comply with their wishes in the matter so as to have them receive their copy of the following month's issue at their new address, as the wrappers bearing their old address are already in the hands of the mailers. All notifications for change of address should reach the office on or before the eighteenth of each month, so as to insure the following month's Magazine being directed to the new address.

Our readers are requested to give their attention to the several advertisements that are published in the Magazine. In making your purchases from time to time it will cost you no more to discriminate in favor of the goods which are exploited through the advertising pages of our book. Much care is exercised in admitting advertisements, and it is a fact that the Magazine would have much more patronage were it not for the rigid exclusion of many propositions which we class as "objectionable." We want to build up a profitable business for our Magazine among reputable advertisers, and there is nothing that will insure the permanent patronage of these business concerns so effectively as for our members to *read* and *answer* the advertisements that are published.

If persons desiring information about soliciting subscriptions will please write, it will gladly be furnished them. Address John F. McNamee, Editor and Manager, Traction Terminal Building, Indianapolis, Ind.

The Bluffton Manufacturing Company, of Bluffton, Ind., is the only company advertising washing machines in our Magazine. This is one of the oldest factories in the country, and the merit, durability and efficiency of their machines have been long demonstrated. Every locomotive engineman should possess one of these machines. They are time, labor and money-savers, and can be had on *thirty days' free trial.* They are using double their usual space in their advertisement this month. Look it up and write them.

It should be clearly understood that any person, whether a member of the Brotherhood or not, can secure a beautiful emblem ring suitable to designate membership in almost any fraternal organization in existence, or a serviceable and durable pocket knife, combining a screw driver, swedging awl, pliers, wire-cutter, packing hook and alligator wrench, by sending two yearly subscriptions to the Magazine, or both for four criptions. Address John F. McNamee, Editor and Manager, Traction Terminal Building, Indianapolis, Ind.

Never consider that you have properly read your Magazine until you have read the advertisements.

The subscription list of the Magazine should be not less than 100,000. Its present circulation is between 59,500 and 60,000. A slight general effort throughout our membership can add another forty thousand within the next few months. Already in response to the EXTRAORDINARY PREMIUM OFFER appearing for the first time in the June issue, orders for new subscriptions are reaching the Magazine office in most satisfactory numbers, and in return for the slight effort of securing two subscribers many of our members are enjoying the possession of a beautiful emblem ring, or a most serviceable and durable combination knife. Many have sent in four subscriptions and secured both premiums.

The Great Western Gloves are the products of the Ellsworth & Thayer Manufacturing Company, of Milwaukee, Wis. They are also the products of a high degree of efficiency, skill and experience in glove manufacture, a characteristic feature of this glove being the seamless double thumb. These gloves have been advertised in the Locomotive Firemen's Magazine for years. They are worn by men on every railroad in the country, and if you can find a glove dealer who does not handle Great Western gloves, send his name and address to the Ellsworth & Thayer Manufacturing Company, at Milwaukee. They will be glad to get such information, and will send you a souvenir for your trouble.

Many railroad men in other branches of the service, as well as neighbors in the vicinity of your home, would subscribe for the Magazine if the matter were brought to their attention. Get their subscriptions, so that they can have the Magazine and you yourself the premiums or commission.

For the first time in many years the advertisement of a union-made cigar appears in our Magazine, that of the "Grand Chief" cigar, manufactured by F. B. Richards & Co., of Binghamton, N. Y. Practically all railroad men smoke to some extent. The "Grand Chief" cigar is made up in five and ten-cent grades, and it has the added advantage of being strictly union-made. Our members who smoke should be consistent with their union principles and give these union-label cigars at least a trial. You have considerable influence with your local cigar dealer, use it to induce him to carry these goods in stock, to please you. He can do it without any extra trouble. If he will not carry them in stock, write direct to the factory. They will help you out.

When sending notification of change of address, please give in addition to your new address: First, the number of your Lodge; second, your former address; and, third, the office you hold—if any—in your Lodge or on your Local or Joint Protective Board.

Forum

The General Chairmen's Association.

The fifth annual meeting of the General Chairmen's Association of the Brotherhood of Locomotive Firemen convened in Chicago, Monday, May 1, 1905, and proved to be the most successful gathering of that body that has been thus far held. At 9:30 a. m. Bro. Thomas Burke, Chairman of the Association, and also of the Joint Protective Board of the Santa Fe, proper, called the meeting to order and introduced Third Vice Grand Master, Bro. Chas. W. Maier, who made a few appropriate and thoroughly appreciated remarks, after which he stated that he had been requested by the Grand Master to say that owing to very important business he would be unable to leave the Grand Lodge office so as to permit of his attending the meeting in Chicago, and if it could be so arranged would appreciate it very much if the assembled Chairmen could meet in Peoria on or before Wednesday. May 3. 1905, as he (the Grand Master) had several important matters to present for their consideration.

Roll call revealed the fact that for large attendance the meeting had broken all previous records. The Chairman submitted his report, reviewing the work of the Association since it was organized and dwelling on the great, general and practical advantages resulting from the annual intermingling of its members and their exchange of views and ideas which, bearing as they do on matters pertaining to the protective department of the Brotherhood, the maintenance of a proper standard of remuneration, the adjustment of grievances, etc., are necessarily of the most vital importance to the membership at large. Bro. Burke urged the necessity of having all Joint Boards affiliated. The report of the Secretary and Treasurer showed the finances to be in good condition. The assessments levied thus far to meet the expenses of the Association have been comparatively light, and a decrease in this direction rather than an increase are the strong indications for the future.

The appointment of the following committees was announced:

Committee on Resolutions—Bros. Asa Dillon, Gould Southwest System; O. D. Hopkins, New York Central; J. W. Milliman, Erie System.

Committee on Welfare—Bros. A. P. Kelly, N. Y., N. H. & H. R. R.; H. B. Smith, Northern Pacific; T. F. Roberts, Baltimore and Ohio.

Special Committee—Bros. Geo. K. Wark, Canadian Pacific; R. E. Jones, Duluth and Iron Range; A. Bartlett, Penna. Lines East of Pittsburg.

Meeting adjourned Monday at 6:15 p. m., until Tuesday at 9:30 a. m.

Meeting was called to order at 9:30 a. m. Fourth Vice Grand Master, Bro. E. A. Ball, who was a welcome visitor, was introduced and made a few remarks concerning the condition of the organization throughout the territory in which he worked. He also offered several suggestions for the consideration of the Association, the value of which was fully recognized and appreciated. A number of important questions were taken up for discussion, considerable time being devoted to that of "adjustment of engineers' grievances," "rate legislation," "examinations," and "firemen being held responsible for proper observance of train orders." These, and several other matters, were referred to the various committees. The Committee on Resolutions, to whom was referred the subject of "rate legislation," submitted a report making certain recommendations relative to the "Esch-Townsend" bill now pending in the United States Senate. After considerable discussion the same was "referred to the Grand Master."

The Special Committee recommended a form of circular letter to be sent to all Chairmen of Joint Protective Boards soliciting certain information for the general use of the Protective Department of the Brotherhood, same to be furnished to any Joint Protective Board when desired and requested by the proper officers. This is of the utmost importance, as the use of the information thus sought is of great value to the membership at large. It is, therefore, to be hoped that all Chairmen will co-operate in this particular by replying as promptly as possible to said letter. Numerous other matters were reported by the committees and disposed of. It was decided to notify the Grand Master that in accordance with his wishes a meeting would be held in Peoria on the afternoon of Wednesday, May 3, 1905.

The election of officers resulted as follows: Thos. Burke, Chairman, A., T. & S. F. (proper); O. D. Hopkins, Vice-Chairman, N. Y. C.; Fred McGregor, Secretary and Treasurer, B. & M.; J. W. Milliman, alternate, Erie System; J. A. Cochran, Trustee, G. N.; T. F. Roberts, Trustee, B. & O.; C. M. Rodgers, Trustee, G. C. & S. F.

Fourth Vice Grand Master, Bro. Ball, was again called upon for a few remarks, and gave an interesting account of the development of the Canadian Northwest, paying especial attention to the railroads and the opportunities that would probably follow the completion of those now under consideration. Bro. Geo. K. Wark, Chairman Canadian Pacific, announced in behalf of the lodges in Toronto, Canada, the GRAND UNION MEETING to be held in that city, August 8, 9 and 10, 1905, and extended a cordial invitation to all members to be present. Judging from preparations being made this union meeting promises to be one of the largest and most important ever held in the history of the Brotherhood. At 6:30 p. m. the meeting adjourned to reassemble in Peoria, Wednesday, May 3, 1905.

PEORIA, WEDNESDAY, MAY 3, 1905.

Owing to the fact that several of the brothers did not arrive until late in the afternoon it was decided to hold a night session, and the meeting was, therefore, deferred until 8:00 p. m. During the interval those present divided the time between visiting Grand Lodge headquarters (as well as the new building into which the offices have since been moved) and enjoying the pleasures of a bus ride kindly tendered them by the citizens of Peoria, during which they were very much pleased and entertained with scenes and sights of that live and progressive city.

At 8:00 p. m. the meeting was called to order with the Grand Master, Bro. J. J. Hannahan, in the chair, Bros. C. A. Wilson, First Vice Grand Master, C. W. Maier, Third Vice Grand Master, W. S. Carter, Grand Secretary and Treasurer, John F. McNamee, Editor and Manager of the Magazine, and Dr. W. B. Watts, Grand Medical Examiner, being present. The Grand Master explained his reasons for asking them to come to Peoria, and submitted several important questions which he wished to have considered by the Association. Much time was devoted to a discussion of Railroad Rate Legislation now pending in the United States Senate, as embodied in the "Esch-Townsend" Bill. All grand officers present took an active part in discussing the various important questions presented and offered much valuable advice and information. At 11:50 p. m. one of the most interesting and profitable meetings ever held by the Association was brought to a close, after which the members repaired to the dining-room of the Grand Hotel, where, as the guests of Mr. "Jake" Schnellbacher, they enjoyed a most elaborate "Dutch" lunch and a feast of oratory, intermingled with bright, pleasant and interesting conversation interspersed with happy jokes which flew thick around the festive board. The time was thus spent until the "wee sma'" hours, when the brothers separated, some to take their trains for home, others to secure such rest as their leaving time permitted, and all happy as the result of the mutual enjoyment afforded by the very pleasant hours which they had passed in each other's company. The host, Mr. "Jake" Schnellbacher, although one of the most prosperous and prominent of Peoria's citizens, is a man who has himself come from labor's ranks, and his sympathy with wage-earners as a class, and with the aims and principles of organized labor in particular, is as strong

GRAND LODGE OFFICERS, MEMBERS OF GENERAL CHAIRMEN'S ASSOCIATION AND GRAND LODGE CLERKS, TAKEN INCIDENT TO MEETING OF GENERAL CHAIRMEN'S ASSOCIATION AT PEORIA, ILL., MAY 4, 1905 and practical now as it was when he worked at his shoemaker's bench for his weekly wages. As the substantial service which he at one time rendered our Brotherhood is not generally known, it is appropriate at this time to relate that on a certain occasion when what threatened to be one of the most (if not the most) stupendous conflicts in which the B. of L. F. has ever been involved was looked for from day to day, and when the usual tactics of imprisoning our Grand Officers on injunctional, contempt and other of the usual pretexts was expected, Mr. Schnellbacher left his business, accompanied our Grand officers to the scene of the court proceedings (one of the largest cities in the United States) and through his efforts and extensive acquaintance soon had our interests entrenched behind a barricade of financial and commercial influence representing millions of dollars, which in this cold, selfish world constitutes a factor of such great importance, and which in this instance proved effective in securing the results desired by all interested in our Brotherhood's success in its attempt to protect its members from impositions. The fact that this end was ultimately attained was largely due to the fidelity, sincerity and true practical friendship of Jake Schnellbacher. SCRIBE.

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A Worthy Promotion.

It is with a feeling of gratification that I write of the promotion of Bro. W. S. Blennerhassett, of Lodge 440, to the position of road foreman of equipment for the 'Frisco Railroad, with headquarters at Cape Girardeau, Mo. For the past twelve years Bro. Blennerhassett has been a loyal and faithful member of the B. of L. F., and has spent his time and energy in upbuilding the principles inculcated in the laws governing our membership. He served our lodge for six years as Local Chairman; for two years was Chairman of the Joint Protective Board, and was the delegate from this lodge to the Des Moines Convention in 1900. By hard study, close application to his work in the engine service, and a determination to win, Bro. Blennerhassett is pressing to the front. This lodge "tips its hat" to the worthy brother and bids him Godspeed in his efforts for success. The railroad company could not have secured the services of a better man. Broad minded, cool and conservative, he will draw to himself new friends wherever he goes. Industrious, honest and faithful in the performance of duty, he will no doubt prove of incalculable benefit to the department which he has entered. As a citizen and a member of the Board of Education in our city he will leave a vacancy that will be difficult to fill. But what is our loss will be a great gain to the people of Cape Girardeau.

R. C. FARROW,
Secretary of Lodge 440.

W. J. BRENT,

Chairman Arrangement Committee, Canadian Union Meeting, Toronto, Ont., August 8, 9 and 10, 1905

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Canadian Grand Union Meeting.

The Canadian lodges have decided to hold a GRAND UNION MEETING in Toronto on August 8, 9 and 10, 1905. The committee in charge of arrangements for same take this means of extending to the members of all lodges, also to the members of all lodges of the Ladies Society, in the United States, Mexico and Canada, a most cordial invitation to attend, as nothing will give us more pleasure than to welcome our brothers and sisters from all over. The committee will so arrange the business part of the meeting that there will be ample time for a little profitable enjoyment, so that any of our brothers and sisters who feel like visiting Toronto could not do better than to arrange their visit for the dates mentioned above, and you can rest assured everything will be done to make your visit pleasant.

J. PRATT,
Secretary and Treasurer, Canadian Union Meeting, Toronto, Ont., August 8, 9 and 10, 1905

Arrangements are being made with the hotels for reasonable rates, which will appear in the August Magazine. Arrangements have been made with the Canadian Pacific and Grand Trunk Railways whereby transportation will be granted to members of the Order upon their making application for same through their proper officials.

GEO. E. CROWHURST,
Chairman Entertainment Committee.

JAMES PRATT,
Secretary and Treasurer.

W. J. BRENT,
Chairman.

Accident Insurance for Firemen by the Firemen.

It looks to me as though we ought to add an accident insurance feature to our regular insurance we now have. I will explain a plan here which I think would be all right. We all know that a large number of the firemen carry an accident policy with some company.

My plan is, where a man carries a $500 policy allow him an accident benefit of $5 per week and charge him 50 cents per month, payable quarterly; on $1,000, $10 per week and $1 per month dues; on $1,500, $15 weekly, and dues $1.50 per month. This would be cheap insurance and give the lodge the benefit, no insurance to be paid for less than ten days under doctor's care. Any one making such claim will have his claim signed by the attending doctor and Master of the lodge. In case he is away from his lodge the Master and Secretary of the lodge nearest him will make request. I should like to hear something from some of the other brothers on this subject.

A. G. HIGGINS.

GEORGE E. CROWHURST,
Chairman Entertainment Committee, Canadian Union Meeting, Toronto, Ont., August 8, 9 and 10, 1905

Traveling Cards.

I have been a member of the B. of L. F. for over a year and have taken a great deal of interest in the Order. I have read a great deal of the work, especially on traveling cards. I think the card at present is very good, but it is open to improvements yet. I will suggest a card here that I think will do away with nearly all trouble. While the card we have gives the color of hair and eyes and a man's build and complexion, there are a great many of the same make-up, so it is easy for some one getting a card to fit his general make-up to use it.

I would suggest a card where the member's picture appears, and the seal of the lodge be stamped on the picture. Small pictures do not cost much. Any one can have copies made for a small cost. A person wanting a card will give the Secretary a small unmounted picture which the Secretary will paste on the card in a place provided for same, then place the seal on the picture and card, also giving color of eyes and hair the same as we do now. It looks to me that it would then be almost an impossibility for anyone to counterfeit it.

I am firing a passenger run on the "Soo Line" here and see a great many cards. Some do not even show the lodge seal. Such cards I do not feel right in accepting. I think members should be careful in this line if they wish to make the traveling card good for B. of L. F. men and no others. MEMBER.

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Time and Eternity.

As our engineer pulls out the throttle and we start upon our run, do we have a thought of our duty and our responsibility? Are the headlight and classification lamps trimmed and burning? Is our mind clear and our eyes keen for the danger signal? Are we giving our superintendent the best service possible? If so, stop and think—boys, this may be your last run—my last run! Yes, doing our duty. Our division superintendent may not find any fault with us. We may be wrecked by an open switch, a landslide, a broken axle, a mistaken order, or a slight slip in the great system, and we may be ushered into the presence of our greater Superintendent, and oh! how sad it would be, having been faithful to our division superintendent, to come before the great Superintendent of life's railway without our headlight trimmed and burning (see part of 1st John i, 5. "God is light and in Him is no darkness at all." Also part of verse 7, "And if we walk in the light we have fellowship one with another. The blood of Jesus Christ cleanses us from all sin.")

Our classification lamps (see Matthew xxv, 21, "His Lord said unto him, 'Well done thou good and faithful servant, thou hast been faithful over a few things, I will make thee ruler over many things, enter thou into the joy of thy Lord.'" Also Rev. vii, 13, 14, "And one of the elders answered saying unto me, 'What are these which are arrayed in white robes, and whence come they? And I said, 'Sir, thou knowest;' and He said to me, 'These are they which came out of great tribulations and have washed their robes and made them white in the blood of the Lamb.'")

How important it is that we make our scheduled time. You know from having to account for just one minute lost; then, boys, how vastly more important that we be ready for the end of life's railway and our last run here below. Aye, see to it, boys, that we are saved by grace ere we make that last run. We know not when it will be. So, boys, read the orders of the great Superintendent of all, and obey. (Rom. x, 9, "That if thou shalt confess with thy mouth the Lord Jesus and shalt believe in thy heart that God hath raised Him from the dead thou shalt be saved." Acts xiii, 39. "And by Him all that believe are justified from all things from which ye could not be justified by the law of Moses." Eph. ii, 8. "For by grace are ye saved through faith; and that not of yourselves: it is the gift of God.")

THOMAS E. BENNETT.

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An Appeal.

I have noticed, particularly when traveling over the country looking for work, the way in which some brothers are received in different sections of the country. In the first place I would like to ask the different brothers in general why they distinguish between a Brotherhood fireman, employed or unemployed, and the so-called Brotherhood "boomer fireman?" Is it logical and reasonable? According to my views and my knowledge of the Brotherhood it should not be done. Is it necessary that a brother looking for work should be dressed like a millionaire and flash money as freely? No! Then why is not the welcome extended as cordially to the fireman looking for work as to the brother who is more fortunate and is looking for pleasure instead? It stands to be answered. This may seem to be far drawn, but, nevertheless, it is a fact.

A fireman comes up and makes himself known with a card that should be honored. If he wishes something to eat or a place to sleep it is generally given him, but not always with that sentiment of true fraternalism which he would like to experience. Another fireman makes himself known. In answer to the question, "What can I do for you?" he replies: "Oh, nothing in particular, I am looking for a good time and have lots of coin to procure it." Nothing is too good for him, and everything is done to make his stay pleasant. If a man is good enough to be taken into our Order, isn't he good enough to receive courtesy and benefits to be derived from it? Yes, he is. Then, I ask again, why should there in any case be such a distinction between the fortunate and unfortunate brother? It is only force of circumstances generally that makes a man a "boomer." Some day you may lose your good position—then, well, you are a "boomer" for losing that position, and therefore an object of distrust. One thing is certain, and by this you can generally distinguish between the two. Let a brother in distress go to a "boomer" brother and make known his wants. Will he be turned down? No! He will receive everything he needs. If he wants food he gets it. If a place to sleep he gets it, and it is willingly and cheerfully given. There are no questions, "Why don't you stay to work when you get a job?" and similar inquiries. If he is willing and ready to do this for any brother, why shouldn't the other brothers be willing to help him in times of misfortune and distress? What such inhospitality will cause is hard to foretell. One thing, however, is certain, and that is, it will cause dissatisfaction and, as a consequence, make enemies for the Order in general.

Now, all my brothers who read this, think over the plain facts with an unprejudiced mind and try and maintain the high standard of our beloved Order in every respect. Brothers, I make this appeal to you before it is too late. Keep the B. of L. F. out of the mire and treat all brothers, great and small, fortunate and unfortunate, with equal brotherly love, and let the hospitality extended be given willingly and cheerfully to both alike.

A FRIEND OF THE ORDER.

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In the Field

Second Vice Grand Master.

After completing my work at Birmingham, Ala., I went to Amory, Miss., where I held a meeting with Lodge 604. This lodge has not a very large membership on account of Amory being a small terminal point. However, we held a very good meeting, and I was pleased to meet again Bros. J. M. Brown and R. C. Cadden. From Amory I went to Jackson, Tenn., to examine Bro. Howlett Caradine, of Lodge 201, for total disability. Bro. Caradine was shot in the face from ambush, and lost the sight of both eyes. It is to be regretted that this young man, in the prime of life, should be forever afflicted in this manner. My stay in Jackson was very short, but while there I was pleased to meet Bros. Geo. Vanderbrook, Hilman and several others whom it is always a pleasure to meet.

My next stop was Meridian, Miss., where I held a joint meeting with Lodges 200 and 655. On account of heavy business on the road our meeting was not as largely attended as I would have liked. I also received information from a reliable source while there, that the members at this point are not taking the interest in their organization that they should. I expect to return to Meridian soon, and when I do I hope to find a marked improvement. If every member would take the interest in the organization as does Bros. H. E. Eastburn, J. E. Mitchell and J. D. Alexander, or if those brothers had the assistance of all the brothers as they should there would be no cause for complaint. Brothers, take hold of this matter and see if an improvement can not be made.

From Meridian I went to the historical city of Vicksburg, where I had a very good meeting with Lodge 460. I was pleased to find the lodge in good condition, and this condition can be attributed to the earnest efforts of Bros. W. H. Shaw, D. P. Kennedy and several others, who are at all times willing to make a sacrifice when the interests of the organization can be promoted.

Minden, La., was my next stop, where I spent a day and held a good meeting with Lodge 609. This being my first visit to this lodge I was more than pleased to find it in good condition and the members so enthusiastic. I was indeed pleased to meet Bros. C. F. Clements, Master, W. H. Rooney, Secretary, and J. C. Fuller, Chairman. I appreciate the interest those brothers are taking in the organization and I hope that it will be my pleasure to return there again soon and hold more meetings.

Bidding them good-by, I went to Shreveport, La., the home of Lodge 522, where I held, as usual, a good meeting. This is one of the best lodges in the State, and it is kept so on account of the interest which the members take in doing their part to make the lodge a success. It was a pleasure to me to renew the acquaintance of Bros. J. W. Ferguson and F. A. Atkins, who are always on hand, willing to do their part.

On going to Alexandria, La., I had the pleasure of holding a very good meeting with Lodge 598. The lodge has recently been transferred from Mer Rouge, La., on account of the terminal being changed. I was pleased to meet Bros. J. A. Lightfoot and G. R. Dale. On this occasion Juniper Lodge of the Ladies Society, which has recently been organized at this point, turned out and served refreshments, which were greatly enjoyed by all. I desire to personally thank these ladies for the courtesy extended to me while in the city.

Arriving at Lafayette, La., I was pleased to find Bro. Fred Barr, General Chairman of the S. P. System, looking after the interests of the firemen at that point. In the evening we held a very good meeting with Lodge 653. On account of heavy traffic on the road the boys were most all out or getting rest to › out again. I am very much interested in this lodge, as I instituted it about one year ago. I trust that Bros. Chopin, Kinzback and Milan will have the support of all the brothers and make this lodge one of the best on the system. From Lafayette I went to Atlanta, Ga., to meet with the W. & A. Board, which was in session endeavoring to adjust a grievance.

Completing my work there, I went to Washington, D. C., to meet the Joint Protective Board of the Southern Railway, which was in session for the purpose of readjusting their schedule. On account of the railroad officers being out of the city, negotiations were postponed for several days. In the meantime I made a trip over the N. & W. R. R., my first stop being Crewe, Va., where I held a very good meeting with Lodge 435. I found the lodge in good condition and was glad to meet Bros. W. H. Wigdin and H. L. Smithson, who are efficient officers.

On arriving at Richmond, Va., I was met at the station by the entire Joint Board of the C. & O. R. R., which was in session in that city on the occasion of their annual meeting. This is one of the best Boards, and they represent one of the best, if not the best, organized roads in this section of the country, and if there is any system where the members of our organization should appreciate the organization it is on this system.

At Norfolk, Va., I held a very pleasant meeting with Lodge 76. The success of this lodge can be attributed to Bros. M. Capps, Master, H. L. Glade and L. A. Staples—success to you, my brothers.

Roanoke, Va., was my next stopping point. Here I held one of the best meetings which I have held for a long time with Lodge 182, and to add to the occasion we initiated seventeen candidates. This is one of the best lodges in the South. I attribute its success and present good standing to the efforts of Bros. W. P. Bland, J. S. Yoder, T. Cuddy, S. Callahan and J. W. Creasy. This lodge has a large membership and there is still plenty of worthy firemen at that point who can easily be enrolled, providing the brothers put forth an extra effort and do a little missionary work. I am going to return again to Roanoke just as soon as possible, and stay for a few days and hold more meetings in the endeavor to initiate more candidates.

On my arrival at East Radford I found everything in readiness for a meeting with Lodge 665, and candidates ready for initiation. We held a very good meeting,

J. E. Hoge, 89 S. Hassell, 426 J. Q Miller, 626 P. B. Maxcy, 444 L. E. Rawls, 427 L. E. Stephenson, 403
W. I. Angel, 625 G. F. Voight, 247, Timothy Shea, Geo. Lauterback, 455, James E. Martin, 343
Gen'l Chairman 2d V. G. M. Sec. and Treas.

JOINT PROTECTIVE BOARD, SOUTHERN RAILWAY SYSTEM and I was pleased to make the acquaintance of Bros. G. W. Roberts, P. G. Roberts and G. R. Sibald, who are very enthusiastic in their work. I was also pleased to meet on this occasion Bro. H. T. Jenkins, General Chairman of the N. & W. R. R., who accompanied me to Bluefield, W. Va., where we held a very good meeting with Lodge 446. Business at this point was exceedingly good and the boys are worked very hard and have very little time for rest. I was pleased, however, to find the lodge in good condition. The firemen on the N. & W. R. R. should appreciate the schedule under which they are working, as I believe it is the best one in this section of the country. They should also appreciate the services rendered them by their General Chairman, Bro. Jenkins, who is devoting his entire time to the interests of the firemen and the organization on that system.

My next stop was Huntington, W. Va., where I instituted Lodge 675, with 20 charter members. The members of this lodge represent the firemen employed upon the C. & O. R. R. The outlook for this lodge is very encouraging and it is bound to be a success, providing every one puts his shoulder to the wheel and does his part. I trust that Lodge 294 will encourage the boys at Huntington, and assist them in every way possible to make their lodge a success. I desire to thank Bros. W. J. Walker and H. E. Haskell, of Lodge 294, for the valuable service which they rendered me on this occasion.

Completing my work at Huntington, I went to Washington, D. C., to take up work with the Southern Railway Joint Board, which resulted in effecting a settlement and a readjustment of the schedule for the firemen employed upon the Southern Railway, and which will be very advantageous to them. The firemen employed on this road should appreciate what has been accomplished by the Board and the concessions granted by the officers of the Southern System. I trust that every fireman in the employ of the company will carry this schedule out to the letter and spirit, and give your very best service at all times, and demonstrate to the officers of the company that you are working for their welfare as well as for your own interests. The officers of the Southern Railway extended to the Board and myself every courtesy and consideration that could possibly be extended by any officers of a railway system, and they fully convinced me, beyond any question of doubt, that they are true friends to the firemen employed on their road. I believe the future for the firemen employed upon the Southern Railway is very bright, and if they do their part the millenium will be reached. Before leaving Washington the entire Joint Board and myself, by appointment, called at the White House and were received by President Roosevelt very kindly and courteously, after which we called upon Bro. F. P. Sargent, Past Grand Master, who is now Commissioner-General of Immigration, and who received us graciously and had a pleasant word to say to all the boys. After sight-seeing for a few hours the Board adjourned and the members took their departure for their homes.

From Washington I went to Spencer, N. C., and held a meeting with Lodge 626. This lodge has only been instituted but a short time, but they have done remarkably well, and today they have the largest membership of any lodge on the Southern Railway. The success of the lodge can be attributed to the efforts of Bros. Hannah, Miller, Pethel and Harrison. I was sorry that Bro. Harrison was not in on this occasion, as I would have been pleased to have met him.

My next step was Asheville, N. C., which is known as the "City in the Land of the Sky." Upon my arrival I was met by a committee headed by Bro. Geo. Lauterbach, who took me for a drive around the city and through "Biltmore," Vanderbilt's magnificent and luxurious estate, adjacent to Asheville. This estate consists of thousands and thousands of acres of land and is a country in itself. Artists can not portray, sculptor can not unfold, words can not fittingly describe the beauty, the splendor and the magnificence of this estate. It is no wonder that people come from all parts of the world to see this property. While in Asheville I had the pleasure of attending a meeting of Lodge 455, and I was pleased to find this lodge in good condition: I was also pleased to form the acquaintance of Bros. T. R. Harrison, J. R. Street and O. M. Long, together with several others whose names I can not recall.

On my arrival at Greenville, S. C., I had the pleasure of meeting with Lodge 343, and held a very good meeting. I am very much interested in this lodge, because it was the first lodge which I instituted after being elected Vice Grand Master. It was a pleasure for me to meet again Bro. James E. Martin, who was instrumental in having this lodge organized, and who was elected as first Master, and R. W. Summer, the popular Secretary, who is the right man in the right place, and with the assistance of Bros. F. H. Hill and J. W. Loopor there can be no alarm over the future of this lodge.

S. A. Jorgensen, 2 J. P. Cuddy, 358 G. B. Wylie, 658
Sec. and Treas.
G. Mahood, 358 H. Bradshaw, 322 C. S. McDevitt, 547 W. E. Benson, 565
Gen'l Chairman

JOINT PROTECTIVE BOARD, CHICAGO GREAT WESTERN RAILWAY

I next visited Columbia, S. C., where I met with Lodge 427. We held a very good meeting and initiated several candidates. I trust that the members of this lodge will put their shoulders to the wheel and enroll every eligible fireman at that point, as I understand that there are several of them there. There is no good reason why every fireman at that place should not belong to the organization, and this can be accomplished if every brother will do his part and give Bros. R. J. Walker, O. Land and L. E. Rawls the assistance which they should.

Arriving at Charlestown, S. C., I was met at the station by Bros. J. B. Jeffords and W. R. King, who took me around the beautiful city, which I appreciated very much. This lodge has a very small membership. This is to be regretted, because there are a great many worthy firemen at this place reaping the benefits accrued through the instrumentality of the organization, and by an extra effort on the part of those who are members it may be possible to enroll them to membership. I fully expect to return to Charlestown again soon and remain longer, and assist in building up this lodge. In the meantime, I urgently request that the brothers do their part to build up the lodge, because it is for their interest.

At Augusta, Ga., I had the pleasure of meeting the members of Lodge 332. Our meeting was small on account of the members being out on the road, as business is exceedingly good at this point. I was pleased to meet Bro. W. C. Hancock and several other representative members.

From Augusta I went to Macon, Ga., where I held a very interesting meeting with Lodge 246, and it was a pleasure to find so many old-time members, particularly Bros. E. F. Adams, E. P. Flynn, Paterson, A. J. Smith and T. E. Dunbar, and several others who are always a pleasure to meet. This is one of the best lodges in this section of the country, and I trust she will always hold her place and set an example for all other lodges in this section. In the evening Lodge 246 held a banquet in honor of its twentieth anniversary. The banquet hall was beautifully decorated with palms and roses, which lent an additional charm to the sumptuous repast that was enjoyed by all who had the pleasure to participate: The banquet was opened with a prayer by the Rev. W. N. Ainsworth, after which a selection was rendered by Prof. Moll's orchestra. Later on a most elaborate menu was greatly enjoyed. This was a public affair, and we had with us on this occasion Mayor Bridge Smith, who made a very appropriate address, "Our City," after which I had the honor of addressing them to the toast, "Our Order," followed by Alderman W. A. McKenna, national organizer of the Brotherhood of Railway Clerks, to the toast, "Organized Labor." Rev. Dr. Ainsworth then spoke, his theme being, "The Faith of Railroad Men in their Fellow Workers." The banquet was thus brought to a close. Everybody said good-by and departed for their homes fully convinced that this, the celebration of the twentieth anniversary of Macon Lodge 246, was a success in every particular, and that it would redound to the credit of our organization in the city of Macon.

Arriving at Atlanta, I held a very good meeting with lodge 247, and found it in its usual good condition. This lodge has always enjoyed the distinction of being the best in the South, and I trust every member will see to it that in future she will lose none of her standing.

In conclusion, I desire to say that during my travels through the South I find our organization in a very healthy and fairly prosperous condition. I believe that the members as a whole are taking a greater interest in our organization at the present time than has been done for a number of years before. The future prospects for the locomotive firemen of the South are indeed very encouraging, and by a strict observance of the rules of the company and by close application to your duties you can demonstrate to the officers of the company that it will be for their welfare to employ white firemen exclusively. This I believe can be accomplished, but in order to do so our members must show their superiority from an economical, efficient point of view to bring about the desired results. By the time this issue of the Magazine is in the hands of our members the present fiscal year (June 30) in all probability will have closed. During the last year our organization has increased numerically and financially far beyond our expectation, but there is still room for greater advancement, and this can be accomplished, providing every member will renew his efforts during the ensuing fiscal year, beginning July 1, 1905, and endeavor to enroll to membership every worthy man who is firing a locomotive in this country. I wish to take the opportunity to make an appeal to every lodge and member, that during the next ensuing year, ending June 30, 1906, you endeavor to add to your roll of membership not less than fifteen new members. There is not a lodge in the country that can not do this, providing an extra effort is put forth. There are a great many lodges, however, that can do a great deal better than this—do not stop when you enroll fifteen, but continue on and double that number if you have the material. If our lodges will do this, which I know they can, we will close the fiscal year ending June 30, 1906, with 60,000 members.

TIMOTHY SHEA.

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Third Vice Grand Master.

A visit to Lodge 226 was one of the pleasant features of my work in May. This is one of the best lodges in the State of Texas, and has for a membership many tried and true brothers. I am safe in saying that we held one of the best meetings that Lodge 226 has had in many a day. Bro. Lafayette Ryan, Master, is the right man in the right place. Bro. Walter Nicol, as Secretary and Treasurer, is one of the best in the Order. What member can lay claim to the fact that he has held office without interruption for twenty years? Bro. Nicol can lay claim to this fact. When Lodge 226 was organized, twenty years ago, Bro. Nicol was elected to the position of Secretary and Treasurer, and has held these two offices ever since. His work is up-to-date in every particular. While in En-

1st Row—H. W. Rose, 14   F. L. Gooley, 462   E. S. Watkins, 52

2d Row—R. J. Hamilton, 466   A. O. Black, 16   B. E. Dow, 9   J. G. Lightburn, 299   E. J. Murray, 564   Geo. W. Platz, 10   A. J. Brown, 63
J. A. Killilea, 446   J. W. Ingram, 219   C. J. Grove, 574

3d Row—H. E. Cunin, 630   C. L. Alexander, 564, Past Sec.-Treas.   Frank M. Dye, 445, Sec.-Treas.   C. E. Stewart, 541, Chairman   P. H. Doty, 141, Vice-Chairman   John Martin, 9, Past Chairman

4th Row—D. J. Carr, 297   A. Brooks, 582   J. C. Fox, 416   S. W. Rush, 555   L. B. Reeder, 96

JOINT PROTECTIVE BOARD, PENNSYLVANIA LINES WEST OF PITTSBURG nis I was entertained at the homes of Bros. Nicol and Brumback, all of which I feel grateful for. I hope to be able to make my visits to Lodge 226 more frequent in the future.

On my recent trip to Texas I had the pleasure of meeting Bro. Fred Barr, General Chairman of the S. P. R. R., who accompanied me to Beaumont and Silsbee, Texas. The latter place is where I organized a good lodge.

While in Houston I held a meeting with Lodge 506. Bro. Rentzell is Master of this lodge, and as such he presides over the meetings with great credit to himself and to those whom he represents.

On May 16, 1905, I held a good meeting with Lodge 590, Beaumont, Texas. This lodge is in a prosperous condition and everything moving along smoothly with them. Bro. Ed. Mangum, of Lodge 590, advises me that his lodge represents 50 per cent. of the enginemen on the Gulf and Interstate Railway of Texas. There are two engine crews at work on this line and Lodge 590 has two members out of the four enginemen. He says that he expects to see the entire system solidly and thoroughly organized soon.

Beaumont, Texas, is in the great oil industry of that State, and the city was made famous a few years ago when a gusher of oil was struck that flowed seventy-five thousand barrels of oil every twenty-four hours.

May 16, 1905, was a red letter day in Silsbee, Texas, for the locomotive firemen, as on this day Lodge 677 was organized with twenty-four charter members. Bros. L. F. Hennington and Joe Hord deserve credit for the part they took in so quickly getting things in shape for me to organize. Bro. Chas. Rodgers, General Chairman of the Gulf, Colorado and Santa Fe, and Bro. Fred Barr, General Chairman of the S. P. R. R., were present and assisted me in organizing the lodge. The following named brothers came from a distance to be present: J. I. Jones, Lodge 147; R. J. Bothwell, Lodge 449; J. S. Hyde, J. D. Barksdale, Ed. Mangum, J. L. Thompson and J. F. Standifer, all of Lodge 590. Bro. Standifer was accompanied by his wife and Miss Minnie Earnest, sister of Bro. Earnest. I am very thankful to Bro. Thomson for acting Secretary at the organizing of this lodge. After the lodge was organized the Harry House management served a luncheon that was just splendid. Silsbee, Texas, is in the pine forests of that State and is quite an industrious place. I feel certain that this lodge will prosper, as the outlook for the future is exceedingly good.

On May 17, 1905, a largely attended meetin was held with Lodge 146, Houston. Many things of interest were talked about and none perhaps more than the question of seniority, that comes up so often and that we hear so much about.

On May 19, 1905, an interesting meeting was held with Lodge 551, Argenta, Ark. The lodge was not in a prosperous condition, due to the neglect of the presiding officer. A change was made, and we feel that from now on Lodge 551 will forge ahead under the leadership of Bro. T. M. Stovall. When an officer fails or neglects to do his duty when he can do it there should be no delay in making a change in officers. The organization can not be hampered by the neglect of anyone, much less an officer. Lodge 551 has been a good lodge and there is no reason why she can not be a good one again. The outlook is exceedingly bright for the future and I predict good results from now on.

"No train into Cotter, Ark., on Sunday. Come Saturday," was the message Bro. Dan. Pfister sent me. I complied with his request and arrived in Cotter at 1:00 p. m. on the day that I was requested to come. At Newport, Ark., I found Morris E. Dowdy, J. A. Owens, Jasper Copelin, W. G. Dyans and Fred Aten waiting to take the train for Cotter. These parties had come a distance of 750 miles to go into this lodge as charter members. Firemen that go so far to join our Order are most certainly made of the right kind of metal. Let others take a lesson from these firemen. The trip to Cotter was a pleasant one. The scenery along the White River is certainly grand and there is plenty of it, as the Iron Mountain runs over one hundred miles along its banks. On Sunday, May 21, 1905, I organized Cotter Lodge 676 with twelve charter members. Just as soon as the road is connected up there will be several more crews put on, which will help swell the membership of this lodge. I feel under lasting obligations to Bro. Pfister for his kindness to me while in Cotter. My stay was made pleasant all the time that I was there. I left Cotter on Monday, May 22, 1905, for St. Louis, expecting to meet with Lodge 414 on the next day. In the meantime it had been raining very hard and the result was that landslides and washouts delayed the train at Mt. Olive, Ark., twenty-nine hours. This time was pleasantly spent by the delayed passengers. Everybody seemed to enjoy themselves. This was the first time in all of my travels that I could not communicate with the outside world. I was tied up in good shape with the track washed out and the telegraph wires down. This delay prevented me from making St. Louis in time to meet with Lodge 414.

On May 25, 1905, I met with Bros. Asa Dillon, General Chairman, J. M. Brickhouse, Secretary and Treasurer, C. L. Baker, Local Chairman of Lodge 370, and G. L. Werton, Local Chairman of Lodge 400, in regard to some Joint Board matters. Bro. Brickhouse made his first visit to Kansas, also the town of Osawatomie, made famous by John Brown, of Kansas, and whose monument in Osawatomie is near the Missour Pacific depot.

On May 29, 1905, in company with General Chairman Fred Lewis of Mena, Ark., and Bro. Fisher, Local Chairman of Pittsburg, Kans., I took up some matters of importance with the Kansas City Southern management, Kansas City, Mo. This was my first meeting with Bro. Lewis since his election as General Chairman, and I am well pleased with his work. Grievance committee work is not pleasant work at any time, but it is something that has to be done.

After finishing up my work in Kansas City, I am now on my western tour arranging to do such work as is necessary on the trip.

My first stop was at Big Springs, Texas, where I was greeted on my arrival by a large number of our boys, amongst them being Bros. Price, Badgett, Laly and Snoddy. It is a pleasure to meet with the members of Lodge No. 372, as they always make you feel at home. My trip to Big Springs was in the interest of Bro. T. J. Carter, of Lodge 372, who is suffering from a stroke of paralysis. On my way to Big Springs, and while waiting for connections in Fort Worth with the Texas and Pacific Railway, I had the pleasure of a visit with Bro. Joe B. Myers, a member of Lodge 382, and who, by the way, is Chairman of the Texas Legislative Board. Bro. Myers advises me that the Board was successful in getting through several good laws that will be helpful to the railroad men of the State. There is no disputing the fact that the State of Texas has the best laws on her statute books in the interest of labor of any in the Union. This is as it should be, and my only wish is that the same thing could be said of every State in the Union.

I had the pleasure of meeting Master Mechanic Potten, of the Texas and Pacific Railway, on my recent visit to Big Springs, Texas. Mr. Potten has been located in Big Springs as master mechanic for about fourteen years. He is well liked by all who know him. I appreciated very much the pleasure of his acquaintance.

On my arrival in El Paso, on June 3, 1905, I was met by several of the members of Lodges 135 and 664. The first work I did was to go out to where Bro. Henderson of Lodge 622 was staying and examine him for his disability claim. This brother is in the last stages of consumption and is being cared for by his devoted wife. In the afternoon I held a good meeting with Lodges 135 and 664. These two lodges are in good condition and are getting on nicely.

While in El Paso I had the pleasure of meeting Bro. Hugh Shields, of Lodge 605, Alamagordo, New Mexico. Bro. Shields is one of the strong men in his lodge and advises me that everything is going on nicely with them. The El Paso and Northeastern, the road Bro. Shields works for, has been consolidated with the El Paso and Southwestern Railway. This latter road is owned by the Copper Queen Mining Company of New York and London. It is said that this corporation is the second wealthiest concern in America. While in El Paso I was taken good care of by the members of that city; especially I might mention courtesies extended by Bro. Will Jackson to me while there.

On Sunday, June 4, 1905, at 8:45 a. m. I started for Tucson, Arizona, arriving at the latter place at 7:30 p. m., after a long, tiresome, warm and dirty ride. I rode all day long through New Mexico and Arizona, and all I could see was the desert and mountains. Once in a while the mirage could be seen, leaving the impression that not far off was a fine body of water, which always proves to be untrue. On my arrival in Tucson I was met by Bros. Anderson and Nugent. I was provided with a good place while in Tucson, and that was at the hotel run by Sister Young, who knows how to take care of the Brotherhood boys.

On Monday morning, June 5, 1905, in company with Dr. Mark Rodgers, I went out to a ranch, where I found in the last stages of consumption Bro. M. C. Petersen, of Lodge 34, who is being cared for by his devoted sister. The trip was a nice one and I would have enjoyed it much better had I been upon any other kind of a mission than the one I was on. Tucson is a wonderful city and has a wonderful climate. It is one of the oldest cities of the desert. If a person can not be cured of consumption of the lungs out there, I don't know where to advise anyone to go. In succession I had the claims to examine of Bros. Carter, of Big Springs, Texas; Henderson, of Jefferson City, Mo., at El Paso, and Petersen, of Clinton, Iowa, at Tucson. I feel quite certain if the members of our Brotherhood could only see the good that is done by our Order in cases of this kind, there would be fewer cases of delinquents than there are. While in Tucson, in company with Bro. Young and Wife, I paid a visit to the old home of Bro. and Sister Sargent and viewed the historic place where the Ladies Society of the B. of L. F. came into existence. The building is well preserved, notwithstanding its age, having weathered many winter blasts and summer suns. Tucson is no longer a wild Western town, but an up-to-date city. Ancient customs have given way to modern ones, and it only reflects the fact that civilization is making wonderful progress everywhere, no less in Tucson. In the afternoon of June 5, 1905, I held a good meeting with Lodge 94. The attendance was not large, owing to the heavy business on the road which kept many away. Lodge 94 is one among our best Western lodges. The Worthy Master, Bro. Cramer, can well feel proud of it. The trip from Tucson to San Bernardino was a long, dusty and warm ride. I was glad when it was at an end.

On the night of June 6, 1905, a good meeting was held with Lodge 314, San Bernardino, Cal. The attendance was not large, owing to many excursion trains being run to accommodate the thousands of Knights of Columbus that came to Los Angeles to attend their convention. Lodge 314 is a good lodge and is coming on all right.

In conclusion I wish to say that before the July issue of our Magazine reaches its readers I hope to have lodges organized at San Rafael, Cal., and Blackrock, Utah. The outlook for the Order is good at all places that I visit.

C. W. MAIER.

Fourth Vice Grand Master.

When on my way to examine a brother in Wisconsin for his disability claim and meet with the Canadian Northern Joint Protective Board in Winnipeg, I availed myself of the opportunity when passing through Chicago to spend a day with the General Chairmen's Association which was in session at that time, and become more familiar with the objects and purposes of their meeting together. With that information now in hand, I feel better able to express my opinion that if the intentions of this Association are carried out as outlined it can not help but be beneficial to our members, and also to our organization. It is time we are supplied with schedules and hear of the different conditions of our members in different localities, but it will not be until the representatives of the different systems of railroads get together and discuss these important matters that we will realize what those schedules or conditions mean, and how they compare with those in different sections of our country. I am more convinced than ever that if representatives of every railroad on our continent would meet annually it would materially improve our members' condition in some localities, and the money so spent would be a valuable investment.

On going to Neenah, Wis., I had Bro. Quinn, of Lodge 412, examined for his disability claim, and believe if some of us had been placed in Bro. Quinn's position this claim would have been applied for many months ago.

While in Fond du Lac I had the privilege of meeting several members of Lodge 412 in special session, called for that purpose. From information received, this lodge is in an excellent condition and doing good work for the Brotherhood. I trust they will be successful in organizing a Ladies Society at an early date.

In Winnipeg I was in session with the Canadian Northern Joint Protective Board for several days regarding their new schedule, and finally called upon the Federated Board of that system to take action, but as the whole matter had been referred to the executive officers of the five organizations, I will refrain from making any comments on this important difficulty until the subject has been finally disposed of by those in authority.

While in Winnipeg I had the pleasure of attending two meetings held by Lodge 597, finding them doing valuable work for the Order, and every member ready and willing to stand by our Constitution and fight for its principles. I trust their efforts will prove successful. I also had the opportunity (in company with Bro. G. K. Wark, General Chairman of the Canadian Pacific Railway to attend a regular and special meeting with the members of Lodge 127. The officers and members are to be congratulated upon their greatly improved condition since my last visit, and being at the present time up-to-date in all matters pertaining to their welfare.

J. E. Corbett P. B. Gerry D. E. Champeon
O. A. Jacobs Thos. Conway John Carleson

JOINT COMMITTEE OF ENGINEERS AND FIREMEN, BANGOR & ARISTOOK RAILROAD

My next stop was at Grand Forks, to attend the regular meeting of Lodge 292 and to meet Bro. H. B. Smith, Chairman of the Northern Pacific System. This lodge deserves congratulations on its improvement within the last two years and the good work it is now doing.

I then went to Staples to be present at the regular meeting of Lodge 443, but found only a small representation present, as the majority of the members were on duty. However, a pleasant and profitable time was spent with those present, and from whom I learn that the condition of the lodge was good.

On going to Brainerd I was met by that thoroughly reliable Brotherhood member, Bro. Flickwire, who informed me he was the whole lodge, as all the other members of Lodge 636 were up on the logging road and very busy at the present time. On accepting his hospitality I was shown all books, receipts and property of the lodge. After an investigation I can not help but congratulate the members for their splendid standing, especially considering the fact that they are comparatively a new lodge.

A good representative meeting was held in St. Paul with the members of Lodge 358, also members from Lodges 61, 320 and 450 were present. Not long since the members had a hard struggle to keep above water, but profiting by experience and with a determined set of officers they have a lodge which for system of conducting their finances and living strictly up to their Constitution are setting examples for others to follow. Bros. Kuhn, of Lodge 61, and Riddell, of Lodge 320, gave us good advice and reported favorably for their lodges.

Brothers, are we, the older members of our Order, taking the same active interest in Brotherhood affairs as we did sometime ago, and are we not to a certain extent responsible that some of our meetings are not better attended and made more interesting, and is it because of lack of interest or apathy that some are not within the fold who are eligible? On the other hand are the younger members of our Order showing their appreciation of what has already been done for them in the past, and which has made it possible for them to be so well situated today by having the privileges they now enjoy, and are they showing their willingness to acept office and shoulder their share of the work which has been carried on so successfully in the past, and are they doing all in their power to increase our membership? We all have a duty to perform to help this great Brotherhood keep up to that high standard it has attained. Let every one of us at this end of our fiscal year make a determined resolution that, if possible, we will do more for the uplifting and upbuilding of the Brotherhood of Locomotive Firemen in the coming year than we have ever done before.

EUGENE A. BALL.

Correspondence

Notice.

All letters or communications intended for publication in the Locomotive Firemen's Magazine must be accompanied by the name of the writer. If the writer of an article for publication desires that his or her name be withheld, such request will be complied with, but the correct name and address of the writer must be furnished this office as an evidence of good faith, otherwise no attention will be paid to same.

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LODGE 658—(Member, Clarion, Iowa.) A year ago, May 18, 1905, Lodge 658 was launched on the tide of our great Brotherhood by Second Vice Grand Master, Bro. Shea. While all has not been smooth sailing here, stormy weather and slack business has not decreased the interest in our lodge-room, and our goat, although he is pretty decrepit, still does good work.

We are located on the new extension of the C. G. W. R. R., built two years ago and while business has not warranted many changes in engine and train service, we have great hopes for the future of the Ft. Dodge Division, as well as Lodge 658, and as long as we have such able officers as Bros. Saddoris, Cressy, Stauffacher and Kettenburg we are bound to progress, for they are officers that any lodge might well be proud of. Let us remember, brothers, that our officers must have the support of all the members to make a good lodge. Let us attend meetings whenever possible, pay up our assessments and keep posted on the progress of the Order. Don't get weary in well doing. I hope we may hear from some of the other brothers on the Great Western before another year rolls around.

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LODGE 54—(R. C. Gwinn, Moberly, Mo.) Bro. E. C. Whitcett, on May 5, 1906, presented a three act comedy at Halloren Theater under the auspices of Lodge 54. Considering the weather a fair sized crowd greeted us and each and every one seemed to be well satisfied. Bro. Whitcett played the part of the "blooming" Englishman, which created laughter from the beginning to the end. Mr. Seelen, Misses Klinard, Gingrich, and Grace and Reita Buhalt all deserve much credit. After the play was over five judges went forward and awarded prizes. Bro. Whitcett received a first prize, which was a gold medal; Miss Grace Buhalt second prize, and Mr. Seelen third prize.

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LODGE 247—(Member, Atlanta, Ga.) Our lodge is doing all right, and we have some members who lack considerable of being asleep. We had Bro. Shea, Second Vice Grand Master, with us a few Sundays back and we certainly enjoyed his visit, and would be pleased to have him call on us often, for we like him very much.

We are endeavoring to organize a Ladies Society here and are going to succeed. I would like to see a letter from some of the ladies about the Ladies Society, as it would help us considerable in getting our wives to understand what it is like, and why it is beneficial.

I wish all the brothers much pleasure, health and prosperity.

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LODGE 175—(J. I. Dollison, Newark, Ohio.) I am pained to have to notify you that since my last correspondence we have had to drape our charter again for the death of a beloved brother, Bro. C. S. Elliott, who died on June 9, 1905, at the age of 28 years. He leaves a widowed mother, one sister and one brother. He was one of our most worthy and faithful members. He was patient and battled with that dread disease, consumption, until the last. After trying all medical skill here at home he made up his mind to go to the mountains of Colorado and bidding his folks good-by and paying his dues in advance and making all arrangements with the Secretary and Collector, he went away. He died while away and his remains were brought back and laid to rest in the little graveyard in the country near his home. He was a fine boy and a true B. of L. F. member. Our lodge had full charge of the funeral and a large number of the boys layed off to attend. He was buried on Sunday, June 11, 1905. The brothers were furnished transportation by the B. & O.

to his old home at Concord, where they were met by the neighbors and friends of Bro. Elliott with conveyances and were taken out to his home. Bros. Foster, Hardesty, King, Herrington, Rhinehart and R. Leonard were the pallbearers. The members of Lodge 175 extend their heartfelt sympathy to his bereaved relatives.

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Lodge 677—(Member, Beaumont, Texas.) This lodge was organized at Silsbee, in May 1905, by our Third Vice Grand Master, Bro. C. W. Maier, assisted by Bros. Fred Barr, of Lodge 145, San Antonio, and General Chairman of the Atlantic System of the S. P. Ry.; C. M. Rogers, of Lodge 449, Cleburne, and General Chairman of the G. C. & S. F. Ry.; J. S. Jones of Lodge 147, Temple; M. W. Richardson, of Lodge 156, Palestine; R. J. Bothwell, of Lodge 449, Cleburne; W. E. Mangum, J. D. Barksdale, J. H. Hyde, S. F. Standifer, and J. L. Thompson, of Lodge 590, Beaumont. One of the prettiest features of the ceremonies was the naming of the new lodge in honor of our late deceased brother, Earnest W. Brocker, who was killed in a wreck at Brookland on the Santa Fe on April 30, 1905. Bro. Brocker was an exemplary young man in every respect and one of the best members of Lodge 590, of Beaumont. He was to have been charter member of the new lodge, but as the Ruler of the Universe ruled otherwise his brothers thought the most appropriate thing under the circumstances would be to perpetuate his memory by giving the lodge his name.

After organizing, the following officers were elected and installed for the ensuing year: Bros. J. C. Hood, Master; C. F. Earnest, Vice Master; Oscar Pendery, Past Master; L. F. Hennington, Secretary and Collector; M. M. Dooley, Treasurer; John Cooper, P. O. Felder, and T. J. Clearwater, Trustees; J. C. Hood, Chairman of Protective Board. C. D. Ferguson was made Medical Examiner. They could not have selected a better staff of officers or ones who will take a greater interest in the welfare of the Order had they the membership of Texas to pick from. The new lodge starts off with twenty-four charter members, plenty of good material in sight, and with very flattering prospects for success from every point of view.

With their efficient staff of officers and "Success" as their motto there is no reason why they should not soon have one of the leading lodges of the State. After organizing and going through the routine of business pertaining to the occasion, closing with some interesting talks for the welfare of the Order, the lodge adjourned and all present repaired to the Harvey House where a sumptuous repast was in waiting, and they did justice to it in a way that a fireman only knows how. Sisters Standifer and Earnest, of the Ladies Society, accompanied the Beaumont delegation to Silsbee and return. Bros. Maier and Barr returned with the delegation from Beaumont next morning and held a joint meeting there that afternoon with Lodge 590 and L. S. 107, after which Bro. Barr returned to his home in Houston, and Bro. Maier left for the Pacific Coast in the interest of the Order and for the purpose of organizing other new lodges. Bro. Maier is at his best when organizing new lodges, and on this occasion he was observed to wander out among the tall pines at 1:00 a. m. He appeared to be communing with some spirit whom the membership seemed unable to perceive, and when asked for an explanation he replied that he was just sending a wireless message to those boys where he would organize next Sunday. In the evening a visit to one of the many sawmills with which this district is dotted was both interesting and instructive, but the names of some of the many parts of the machinery seemed to puzzle our Vice Grand Master. He has not yet been able to tell the gender of the iron dogs used by the mill men for fastening logs on the carriage as they are fed to the saws, but we believe after paying us another visit those things will not puzzle him in the least. The visiting delegation from Beaumont and elsewhere were royally entertained, and we only hope for a return visit, when we will try to return in a small way the many favors we received at the hands of the members of Lodge 667. Mr. Dunham, the genial manager of the Harvey House was the recipient of many compliments for the elegant spread. The only regret we had was that we did not have a few more Dunhams to manage more dining-rooms on the several railroads in Texas.

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Lodge 598—(C. C. Rush, Alexandria, La.) Our lodge is progressing very nicely. We are increasing our membership slowly, but surely. We held our first joint meeting with the Ladies Society a short time ago, and I must say everything progressed nicely for the first joint meeting ever held. Every one acted as though they were "old timers" at the business, especially our honorable Secretary and Vice Master. The only thing that worried the Vice Master was that he was afraid the icecream would melt before the time came to adjourn. However, when we did adjourn and entered the dining-room we found an abundance of icecream, lemonade and cake, all of which was delicious. I wish to thank the ladies for the delicacies, and hope we may have many more joint meetings with the sisters, and that these meetings will be the means of getting more of the brothers out to lodge.

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Lodge 146—(Member, Houston, Texas.) The monthly joint meeting of our lodge and L. S. 43 held recently was a splendid success. The meeting was largely attended. The evening was begun with an address of welcome, followed by a musical entertainment. The address given later on in the evening by Bro. L. D. Sherfy on "The History of the Organization" received hearty applause. Refreshments were served and the young people passed the time together until a late hour in social diversions. The affair was one of the most enjoyable ever given by our lodge, and will certainly be remembered as such by all who attended.

It is with a sad heart that I announce the death of Fireman Donovan, who was killed in the Harrisburg wreck which occurred Sunday evening, May 7, 1905. The engine and cars were completely demolished, having caught fire from the burning fuel tank, and it is wonderful to think that any escaped with their lives. The engineer was also killed. The cause of the wreck is not known. The scene of the accident was nearly one hundred yards from a curve, and it is probable that the cause will never be known. There has been nothing found in the gearing to throw any light as to whether or not anything had become wrong with it. Fireman Donovan's feet were pinioned beneath the tender, holding him as in a vise while he remained conscious and felt the flames leap about him, burning him to death. The rescuers worked hard to release him, but on account of the heat and flames had to desist and in agony see him burned to death. Fireman Donovan's father and mother reside in Ireland. He was about thirty years of age.

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Lodge 512—(C. Edgar Wooden, Jr., Hagerstown, Md.) We are all glad to see Bro. Payton breathing the fresh, healthy air of the Shenandoah Valley once again. He has recovered sufficiently to be able to get around with the aid of a cane. He is still quite weak and his usual 225 pounds avoirdupois has dwindled to about 150 pounds. He will soon catch up again, but not very fast if he continues to worry over the pretty English lady who nursed him through his illness. I understand that he became infatuated with her and that he actually wanted to call a minister into service while still in the wild stages of feverish delirium. We hope, however, that as soon as he recovers sufficient strength to face the minister he will take unto himself the fair Virginia lady upon whom he centered his affections before his illness.

I am very sorry to say that one of our brothers in Hagerstown is quarantined on account of smallpox. An epidemic of this disease prevails here at the present time and Bro. C. A. Cosens has fallen a victim. He is not seriously ill and expects to be out shortly. Our lodge is still in the race and gaining each month.

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Lodge 392—(Member, Blairsville, Pa.) It is with deep and profound sorrow that I announce the death of our beloved brother and Vice Master, Harry E. Veigle, who died at his home in Lilly, Pa., on April 13, 1905, of diabetes, agitated by an injury on February 23, 1905, while in the performance of his duty. He leaves a mother, stepfather, two brothers, two sisters and innumerable friends to mourn his loss. The funeral took place Sunday, April 16, 1905, at Lilly-Dale Cemetery. A large number of our members attended in a body.

Brother Veigle entered the service of the company in August, 1902, and served in the capacity of fireman until December, 1904, when he was transferred to the position of brakeman. He joined the Brotherhood in 1903 and was a model member, faithfully filling the office of Vice Master for several months. The members of our lodge extend their heartfelt sympathy to his bereaved family.

Our lodge is at present in a very prosperous condition, there being over one hundred members in good standing, with plenty of material to work on. Business is fairly good on our road and the prospects for the future are very bright.

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Lodge 33—(Don E. Erwin, Trenton, Mo.) It has been four years since our lodge has had occasion to administer the last tribute of respect and brotherly love to one of its number. On April 22, 1905, Bro. Wm. D. Brunt was suddenly torn from our midst by the derailment of train No. 3 on the Missouri Division of the C. R. I. & P. R. R. at Ladsdale, Iowa. In the untimely death of Bro. Brunt our lodge has lost not only a worthy member, but a factor—one whose place can not be filled, and one on whom a call to duty never went unheeded. Bro. Brunt was a promoted man, having been put back firing on account of depression of business, which makes his death seem all the more untimely.

We find it impossible to express our feelings toward Mr. A. Pool, Superintendent of the Ladsdale Coal Mines, for his noble and courageous effort in rescuing our brother while lying partly under the engine submerged in scalding water, himself receiving very severe injuries.

Through the columns of the Magazine we wish to thank the members of Lodge 137, of Eldon, Iowa, for the very creditable manner in which they took charge of the remains, and for their support and attendance at the interment.

Bro. Brunt was 34 years of age, and is survived by a wife, father, two sisters and two brothers. While we lose a friend and brother, we realize our loss is as nothing when compared to theirs, and in paying tribute to our brother will say he was of a charitable disposition, kind, loving and a man devoted to his home, and may the God above, who doeth all things well, sustain them in this sad affliction.

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Lodge 360—(H. Johnson, Springfield, Ohio.) With feelings which we can not express, we write to let the brothers know of a very sad accident which took place and called away one of our most cherished brothers—loved not only by one, but by all. In the early morning of May 9, 1905, as No. 54 was on its way north and Bro. Arthur Stafford was at the throttle of engine No. 76, by which this train was being pulled, little did he or any one think of his engine being wrecked. As they approached and were upon the crossing of the Delaware Division of the Big Four Railroad, a switch engine with a cut of cars backed through them, striking the engine and tank. Bro. Stafford, in jumping to save himself fell, and before he could get away the tank was overturned upon him, killing him almost instantly. The news was soon conveyed to his relatives and many friends. With aching hearts and tearful eyes we mourn the loss of such a beloved brother. We have draped our charter in deepest mourning for him. His remains were prepared for shipment at Springfield, Ohio. The brothers of Lodge 360 and members of the K. of P. Lodge, of which he was also a member, did everything they could in making arrangements for the funeral, and they certainly deserve credit. While we regret that not as many of our worthy members attended the funeral as we would have liked, still we wish to extend our many thanks to all who assisted in accompanying the remains to the home of Bro. Stafford's parents, to where they were shipped near Parisburg, Va. The floral offerings were beautiful and were highly appreciated by all, especially by his parents. The members of our lodge extend their sympathy to the relatives left to mourn his loss.

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Lodge 472—(Henry Schulte, Buffalo, N. Y.) Again within a short time in the year of 1905 we were called upon to drape our charter in mourning. On January 27, 1905, one of our beloved brothers, John T. Wood, lost his life without a moment's notice through a boiler explosion. This accident robbed a mother of two of her young and prosperous sons, who were buried side by side in one grave.

On May 5, 1905, the angel of death called upon us again and took from our midst one of our oldest brothers, Jeremiah A. Cronyn, who has been a member of the Brotherhood for over fifteen years. He was old in our organization, but still young in years. In his death a wife and young daughter are left to mourn the loss of a beloved husband and father, and Lodge 472 has lost one of its most active members who was always ready to give a helping hand where help was needed. We extend our heartfelt sympathy to those who mourn his loss, and pray that He who was at our brother's side may remain also at the side of his dear ones.

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Lodge 651—(Albert Simons, St. Marys, Pa.) The members of our lodge, together with their wives and sweethearts, held their second annual ball at Anderson's Hall, Dagus Crossing, on Monday evening, May 29, 1905. A special train of three coaches was granted us by our kind-hearted General Superintendent A. M. Laine, with Engineer, Bro. J. C. Williams at the throttle and Bro. W. R. Clarkson at the scoop. The train reached Dagus Crossing at 9:00 o'clock p. m. About two hundred couple participated in the grand march, which was led by our esteemed brother, M. L. Gahr and sweetheart. The music was rendered by McBride's orchestra. It was indeed a pleasant sight to see so many happy faces gathered together with but one object in view, that of having an enjoyable time. There were twenty-three dances and three extras on the program. The dancing was kept up until 3:00 a. m. when, after the "Home, Sweet Home" waltz had been played, the brothers made for the train which was in waiting and carried them to their homes safely. Much credit is due the different committees for the able manner in which the arrangements had been carried out, and through their efforts the lodge has realized a substantial sum.

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Lodge 392—(Member, Allegheny, Pa.) Our lodge is still in the land of the living and has passed the 100 mark in its membership. "Billy" is getting in good shape to do his duty, for there are about ten or twelve more candidates who will soon be ready to demand his services, and I think he will be there to give them their bumps. Several of our brothers have gone over on the other side of the cab in the last year and are prospering. We have a pretty good division to work on as a whole, as some of our brothers have left and gone elsewhere to fire, but generally return to the firing line on the West Penn., and, by the reports they give, it is as good as any other road. At times we have our troubles, for we often have leaky engines and sometimes some very bad coal and the pointer wants to go the wrong way, but as a rule our engineers are a very good set of men and do not forget the days gone by.

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Lodge 15—(J. A. Fraser, St. Conegonde, Canada.) Our charter has again been draped in mourning for our beloved brother, George I. Reid. On Friday, May 12, 1905, Bro. Reid was firing engine 970 on a passenger train from the west, and as he was performing his duty as a fireman he was struck on the head by a mail catcher near Point Claire. He was taken to the hospital where he died Saturday afternoon at 4:00 o'clock, May 13, 1905. He had been a member of our lodge for about three years. He was a man who had no enemies, was kind, loving and generous, and always had a pleasant smile and a good word for everybody. Bro. Reid leaves a father, mother, two sisters and three brothers, besides a large circle of friends to mourn his loss. On Tuesday, May 16, 1905, his remains were conveyed from his father's home, Point St. Charles, to Mont Royal Cemetery. It was one of the largest funerals seen in this part of the town for a long while. A number of the brothers from the B. of L. E. and the B. of R. T. attended, also.

Our lodge is prospering. Our membership at present is about 70, but we expect plenty of work for the goat in the near future. Business on our road is falling off at present. Our busiest time is in the winter. We had a visit from Fourth Vice Grand Master Ball last month. We would be very much pleased to have other Grand Lodge officers visit us.

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Lodge 386—(D. L. Marrs, San Diego, Cal.) On May 20, 1905, Bros. Mark A. Baird and Benjamin H. Smith with engine 7 on the N. C. & O. R. R. were on their way to National City with three or four cars loaded with fruit. There was only the conductor on the train, and he was inside the cars checking up the boxes of fruit. When coming down a slight grade, and when almost through a cut a few feet deep, without any warning the engine left the track. The pilot of the engine went into the side of the cut, and the momentum of the train shot the first car behind the engine right across the tank frame shoving the oil and water tank combined off the frame and catching Bro. Baird just across the abdomen and mashed him internally. There were two large bruises on the right side of his head. The engine was turned over on the left side with the wheels up in the air. Bro. Smith, the fireman, was thrown about forty feet from the engine, stunning and bruising him very badly. The conductor, as soon as he could, tried to lift the tank off of Bro. Baird, but finding he could not started back up the track towards Chulavista for help and to flag the passenger train which was following ten minutes behind the freight, stopping and telling them what had happened. They went on down to the wreck and he went on to the city. The crew and passengers on the passenger train willingly gave assistance and the oil tank was lifted. Bro. Baird was carried about a quarter of a mile away from the wreck, where he died two hours later. While under the tank the manhole became open and the oil ran down all over his face and clothes, almost strangling him. Bro. Smith was taken home in a light wagon and the party did not tell his mother who they had brought from the wreck. In a few minutes his father came and told his mother to get some hot water, that their poor Ben was in the wreck. Bro. Smith is up and walking around now and is getting along nicely.

Bro. Baird was buried by the Masonic fraternity. He was about 36 years of age and was admitted to our lodge in January, 1898.

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Lodge 94—(Member, Tucson, Ariz.) Our lodge was the recipient of the following invitation a few weeks ago: "All the brothers are cordially invited to attend a social and dance, May 26, 1905, bringing their wives, sisters, mothers or sweethearts, to be given by the Ladies Society of the B. of L. F." The invitation was also extended to the engineers, conductors and brakemen. The halls were tastefully decorated with bunting and flowers, and artistic shades were placed over the electric light globes, in the colors of the Ladies Society, which helped to make the hall more enticing. What attracted the most attention was the word "Welcome" at the end of the hall opposite the entrance. Everyone was certainly welcome, and the crowd felt the friendly one-word expression to its fullest extent. Dancing started at 8:30. After the crowd had amused themselves with dancing and otherwise, ice-cream and cake were served. Everybody expressed themselves as having had a most enjoyable evening, and too much praise can not be given the ladies for their enterprise in getting up the social.

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Lodge 208—(Member, Susquehanna, Pa.) Our lodge is still up-to-date. At our last meeting we had two candidates for the goat and he did the work fine. We are having a good attendance of late, and if any of the boys are laying in they look for lodge night, for there is something to interest them along the firing line. I am sorry to say that Bro. James Griffin met with a very painful accident, on May 30, 1905. While pushing a train on Jefferson Division he was looking for a signal and his head came in contact with a box car standing on a switch. His scalp was laid open for about seven inches. He was knocked back in the cab and hit his head on the engineer's brake valve, cutting his head open on the other side. It was a close shave for him. Bro. French, who was firing for him, saw that something was wrong and went to look for his engineer. He found him, to all appearances dying in the bottom of the cab, but after they took him to the hospital it was found that he had only bad scalp wounds.

Bro. A. Simons is quite a little better at this writing. He is able to be around on crutches. Bro. Joe Chalker is helping out on the Jeff Division for a few days. Bro. Van Whitch is firing out of Binghamton. Bro. C. H. Ross is firing the local freight on the east end. Bro. Geo. Kosensky has plenty of attraction down on the farm of late with his new graphophone. He seems to enjoy life in the "good old summer time." Of course, he is always welcome, for you see, brothers, he is looking for a life partner. We wish him good success.

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Lodge 194—(Alex W. Stow, Missoula, Mont.) At present the members of our lodge are greatly interested in the coming election of officers for the ensuing year. All of the offices will be filled by new men this year and, while we regret that such men as our present Master, Bro. C. A. Beebe, and Bro. Wm. F. Koehler, Chairmen of our Local Protective Board, do not see fit to serve another term in their present capacities, we hope their places will be filled by men who will adhere as strongly to the principles of our Brotherhood as they have done. Bro. Koehler is now on the right side and, by the way, we were informed a short time ago of the arrival of a little fireman at his home. Congratulations to you and yours, William.

The writer has been unable to find out whether or not it was a case of "love at first sight," but be that as it may, Bro. John Love and Miss Lyda Goff, of Helena, were married in Helena on May 1, 1905, and we have been smoking the best there is. A long and happy life is the best we can wish you, John.

Our Joint Protective Board convenes at St. Paul, Minn., July 15, 1905, at which time matters of great importance to the firemen of the Northern Pacific system will be discussed with the general officials of the road. We are taking in new members right along and there are several more to come. Business on the road has been exceptionally good for the spring months and we are having all we care to do right now, and with the increased volume of passenger traffic, too, and from the Exposition at Portland, we are assured of all the work we can do this summer. The boys are patiently waiting for the new engines which are to be used in place of our old tandem compounds. The new ones we understand are the "Mikado," which was shown in the February number of the Magazine. We will be very much pleased to receive a visit from one of our Grand Lodge officers and hope one will soon come our way.

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Lodge 666—(Wm. H. Dailey, New York, N. Y.) We are now nearly a year old, having started with a charter membership of ninety-four which has been raised to about one hundred and ten in all. Our last meeting (prior to date of writing, May 31, 1905), was held on May 23, 1905, at 8:00 p. m. and a goodly number were present. As a result we had a very good meeting, which is always to be desired when such important events as the nomination of officers are at hand. The boys took hold very nicely and several interesting subjects were brought up and discussed. About the most interesting subject was a partial report of the Chairman of our Joint Protective Board, which was read by himself. Bro. Kelly, the Chairman, had a very long document and many interesting things were treated.

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Lodge 608—(Member, New London, Conn.) The death of Bro. Benj. F. Goodman, member of Lodge 57, occurred on May 13, 1905. He was running engine 367, west bound on the Shore Line Division of the N. Y., N. H. & H. R. R., and while standing on the steps looking at a hot tender journal he was struck by a bridge and knocked from his engine into the water some fifteen feet below. He managed to get ashore but died soon afterwards, having received bruises and internal injuries. Bro. Goodman lived at New London, having recently been promoted to engineer and transferred from the Prov. Division to the Shore Line Division. He leaves a wife and child, two brothers and an aged father to mourn his loss. He was a faithful member of the B. of L. F. for several years. The funeral was from his late residence and the remains were buried in Cedar Grove Cemetery. The Brotherhood conducted the services at the grave, assisted by members of Lodges 57, 608 and 284. There were many beautiful floral offerings, including a large pillow of flowers with the inscription "Member of 57 B. of L. F." Bro. Goodman carried a class A policy.

We have just moved into our new hall at 8 Washington street, and it is hoped the members will appreciate it and attend meetings regularly. We are still increasing in membership, both by transfer and initiation.

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Lodge 666—(James F. Geraghty, New York, N. Y.) Once again within a year we have to drape our charter, for on June 8, 1905, we buried one of our beloved brothers, Thomas Callahan, who died after being sick for a month. Our lodge showed that we were all banded together as one when forty of our brothers attended the funeral at St. Jerome's Catholic Church, and over twenty followed the hearse to Calvary Cemetery where the last rites of our Order were performed by the Master and Treasurer. The pallbearers were Bros. John Marks, R. Turfey, John Lyons, and C. Larkin. Others who lost time to attend were Bros. Felix McCarty, John O'Neil, Timothy Tookey, Wm. McGee, James Gregory, John Edwards, Matthew Ryan, Frank Kellehar, Ed Martin, Robt. Roche, H. Bean and Wm. Dailey; also Engineers P. Fitzgerald and James Coyle. The widow and children have the heartfelt sympathy of all the brothers of our lodge. Bro. Callahan was one of the old timers on the N. Y., N. H. & H. R. R. and was liked by every one who knew him.

I also wish to call attention to the fact that all of our members thank Bro R. Quirk, of Lodge 149, and Bro. A. P. Kelly, of Lodge 284, for their able remarks at our last meeting. Bro. Kelly, as Chairman, tendered his report for last year, which was very long and showed that the New Haven Railroad boys have one of the best and brightest Brotherhood men in the country working for our interests. As one of the brothers who was in session with Bro. Kelly during our recent trouble on this road, I hereby wish to thank him for the able manner in which Bro. Shea, Second Vice Grand Master, and himself settled our differences, also Bro. A. L. Clifford, of Lodge 57. Business is not very good here at present, but the goat is still working overtime—ask Bro. P. Deady, he ought to know. We also have the pleasure of seeing Bro. H. Pinney, Master of Lodge 149, at all of our meetings, and his remarks are always interesting. I extend to all brothers who are in New York an invitation to visit our meetings and get acquainted with the men who will soon make Lodge 666 the banner lodge of New York.

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Lodge 596—(Member, East Toronto, Ont.) We are very much alive just at present, although it has been some time since you have heard from us. It was with sorrow that the brothers of this lodge heard of the death of Bro. Skelcher's mother, who died so suddenly at her home in Montreal on May 11, 1905. Bro. Skelcher and his relatives have the heartfelt sympathy of all of our members.

We have a good membership here and, although we are losing a few of our older heads, they having gone into the B. of L. E., we have new and good material coming all the time. We have good attendance at our meetings and business is done right up to the handle under the able management of our worthy Master, Bro. Rine. We are quite busy now preparing for the coming union meeting, and when the brothers see the names of such warhorses as Bros. Sands and Reid, of Lodge 596, along with old-timers of Lodge 67 and 262, they need have no fear of the warm time that is awaiting them.

There seems to be an epidemic of weddings among the brothers just now, and as the penalty is a box of cigars from every one who gets married it seems as if we will be smoking for the next two or three meetings. It seems the brothers have been waiting for Bro. Hague to pave the way, as his wedding had been looked for for a long time. At last Harry has mustered up enough courage and says he is going to show the boys a good example. He has decided to lay off long enough to get done up, and also to assist in putting the finishing touches on his new home which he is building. The brothers of Lodge 596 wish Bros. Hague and Dixon long life and happiness.

We have had quite a hard time on account of sickness. Three of our members have been off sick since last winter, and we are all glad to see Bros. Schaefer, Zimmerman and Kelly back to work again and looking as well as ever.

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Lodge 512—(C. Edgar Wooden, Jr., Hagerstown, Md.) In looking over the June number of the Magazine I was very much pleased to note a letter from Lodge 645 under the signature of Secretary L. P. Carvell. It was short, but sweet. This was their first letter, but I hope not their last. Yes, Brother, I have mentioned your lodge often in my letters, because we are two lodges on a system, the members of both coming more or less in daily contact with each other, and a few words occasionally in your behalf conveys to our brothers and sisters an impression of the perfect state of peace and harmony that exists between us. We are banded together to pull on the rope at the same time. It gives us pleasure to mention your lodge, but I would rather you would write and let us hear from you boys more directly.

On a recent visit to Baltimore I was fortunate to collide bodily with Bro. Merritt C. Howe, of Lodge 214. I told him to look us up if he ever came our way, so he called on us a few days ago and with the kind assistance of Bro. F. Harbough, has landed a position on the Western Maryland Railroad.

"There is always something doing." By the time the Wabash fliers run through Hagerstown we have reason to believe that the result of this "something doing" here will be that the immense electric headlights of the Wabash express engines will shine upon the same state of feeling here between officials and employes as now prevails on Western divisions. "Whoop her up!" boys. Your movements are being watched with interest.

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Lodge 673—(Member, Harrisburg, Pa.) Our worthy Master, Bro. Thos. H. Yost, has become quite expert with the bicycle. Those daring ones of Barnum and Bailey's great show who performed the feat of "loop the loop" will have to take a back seat. Bro. Yost has performed a greater and more daring feat in looping the rocks of Red Hill, and had it not been for a mud puddle into which he looped and sat he would have looped the Susquehanna River. Now, Bro. Yost, take the advice of a friend and always "look before you loop."

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Lodge 431—(Member, Ionia, Mich.) It is with deep sorrow we announce the death of our beloved brother and Master, William C. Alvord. He, with his fireman, Joyce Payne, met death about 4:30 a. m. June 6, 1905. They had been to a point about six miles from Ionia and were backing up when the engine went through a culvert which had been washed out, due to the heavy downpour of rain. The engine turned over on its side, falling about 25 feet and pinning our brother beneath. Nearly four hours elapsed before he was gotten out, owing to the workmen being handicapped by the water and sand. Fireman Payne was severely injured and lived only about thirty minutes. He was not a member of our Order, but had an application filled out and his intentions were to join soon. Our lodge had charge of Bro. Alvord's funeral, which was held from his late residence on June 8, 1905. Owing to many washouts on the road business was practically at a standstill, which enabled a great many railroad men to attend the funeral, and we wish to extend our thanks to the engineers and machinists who turned out in a body and co-operated with the firemen. The remains of our brother were taken to Mecosta, the home of his parents, for interment, the journey as far as Belding, eighteen miles, having to be made in carriages, thence the remaining distance about forty miles by rail. A brief service was held at the residence of his father. The following day the remains were conveyed to the cemetery. The services at the grave were conducted by the brothers selected to act as pallbearers with the assistance of Bros. J. M. Sherman and H. G. Humphrey. We regret that the condition of the road prevented more than a few of the brothers to accompany the remains, when, if conditions had been normal, a special train would have been run permitting us all to officiate in the last sad rites. Bro. Alvord leaves a mother, wife and two small children to mourn his loss, besides a great many friends and acquaintances. He carried $1,500 insurance in the Brotherhood, having increased it a short time ago from $500.

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LODGE 601—(C. H. Miller, Youngwood, Pa.) Five of our brothers have just passed through some great trials. I wish to express the sincere sympathy of the officers and members of Lodge 601 through the columns of our Magazine, first to Bro. L. M. Guiste, who recently buried his beloved wife. Second, to Bro. A. N. Decke, who fell sick and is very low with fever at this writing. Third, to Bro. S. G. Glassburn, whose wife died on May 30, 1905. (It will be remembered that Bro. Glassburn resigned the Chairmanship of the Joint Protective Board when it met in Philadelphia this year, which position he had held for many years, on account of the poor health of his wife.) Fourth, to Bro. P. T. Pool, who buried his beloved mother, she having been confined to her bed for many months, and then to wind matters up Bro. T. F. Armburst took the fever and is lying very low. It looks as if a "hoodoo" had fallen over Lodge 601.

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LODGE 673—(Member, Harrisburg, Pa.) For the first time since our lodge was organized a little over four months ago the Grim Reaper, "Death," has entered our ranks and we are called upon to drape our charter in mourning for the loss of Bro. W. F. Hammill, who died May 29, 1905, of acute Bright's disease. Bro. Hammill was buried at Falmouth and quite a number of the brothers of Lodge 673, including our worthy Master, Bro. Yost, Vice Master, Bro. Hubble, and Past Master, Bro. Maguire, accompanied the remains to their last resting place. Among the many floral designs was one from Lodge 673 consisting of white roses and lilies with the letters and figures "B. of L. F., 673" woven on white ribbon and entwined among the flowers. Our members extend to the bereaved wife and relations their heartfelt sympathy in this their hour of bereavement.

On Sunday afternoon, June 4, 1905, we held a joint meeting with Lodge 174 and L. S. 60 in our new lodge-room, White's hall, this city. Bro. Yost presided over the meeting in his usual able and dignified manner. The meeting was opened by singing a few stanzas of that beautiful hymn "Nearer, My God, to Thee." Prayer was offered by the Chaplain, after which our new charter, same having arrived a few weeks before already framed, and which act we charge to the kindness of our worthy First Vice Grand Master, Bro. C. A. Wilson, was placed on the wall by Bro. Harvey Motter, assisted by Bro. W. H. Patrick, of the B. of R. T., of this city. After singing again, Sister Bless in behalf of the Ladies Society presented us with a beautiful scarf with the name and number of our lodge thereon for our altar. Bro. Yost in a few well-chosen words thanked the ladies for the handsome gift, when Bro. Patrick sprung the next surprise on us by presenting to the lodge in behalf of Bro. Geo. Dinger, wife and daughter, a handsome bible, also to grace our altar. These two beautiful and appropriate gifts coming so closely together and so unexpectedly somewhat disturbed the equanimity of Bro. Yost, and Bro. Bailey replied to the presentation speech, and in his usual happy vein thanked the donors for their precious gift and assured them of the appreciation of the boys of Lodge 673 for remembering them in so handsome a manner. Bro. Harvey Motter, of Lodge 174, being one of the early pioneers of the B. of L. F. in this city, gave us quite an interesting account of the early struggles of the B. of L. F. and traced its success down to the present time. His talk was appreciated and enjoyed by all. Sister Redmon being called upon spoke next and brought the brothers to a realization of their duties by showing them it was their duty to stimulate their wives, mothers and sisters by taking an active interest in the Ladies Society. Other remarks were made by a number of the sisters and brothers present, all tending to the good of the Order. The meeting was then adjourned by all rising and singing "God Be With Us Till We Meet Again."

An hour was then spent in a very pleasant manner renewing old acquaintances and making new ones, after which we returned to our homes, feeling that it was good for us to have been there, and that the meeting was one long to be remembered and would be productive of much good.

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LODGE 409—(Will H. Morrison, New Albany, Ind.) Again we are called upon to report that a sad accident has sent to his long sleep another of our members by the death of Bro. J. D. Johnson, who was firing out of East St. Louis on June 13, 1905. The train left the rails about one-half mile east of Golden Gate, Ill., killing Bro. Johnson by cutting his body in two. In his death we have lost a good member, a true Brotherhood man, and the wife and children a fond husband and loving father. To them we extend our most heartfelt sympathy.

His engineer, Bro. Otto Graitz, who died about eighteen hours after the accident, was an old member of Lodge 409 in its infancy, and to his bereaved family we extend our sympathy.

Our lodge is still adding new members, having taken in eight or ten since our last meeting. Some were old hands at firing and they say they wish they had come in sooner, as they received the full benefit of long waiting. Come in, boys, as delays are dangerous.

* * * * *

Official

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

Charles M. Short.—Has not been heard from for ten years until just recently, when it was learned he was firing in Wyoming. Any further information regarding him will be thankfully received by his mother, Mrs. M. A. Annett, 1915 Hickory street, St. Louis, Mo.

John O. Perry.—When last heard from was in Roff, Ind. Ter., which was about three years ago. Any one knowing his whereabouts or any information concerning him will please correspond with his sister, Mrs. Annie Hoover, 200 Sycamore street, Camden, N. J., or John Colton, Secretary, Lodge 72, B. of L. F., 412 South Sixth street, Camden, N. J.

Will Arthur Burnham.—Is a member of the O. R. C. When last heard of he was down in Georgia or Alabama. Any one knowing his whereabouts will please correspond with C. E. Burnham, member of Lodge 568, B. of L. F., Box 1462, Duquesne, Pa.

W. F. Baker.—Is a fireman. When last heard of was living at 118 East Virginia street, Pine Bluff, Ark. Any one knowing his present address will confer a favor by addressing J. A. Henson, Box 378, Rye, N. Y.

John C. Snyder.—Known as "Jack," formerly of New Albany, Ind. Is a machinist. Any information regarding him will be appreciated by R. Main, Secretary, Lodge 268, B. of L. F., 1420 Charter street, New Albany, Ind.

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Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possession of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the Lodge which issued same:

Pocketbook containing card good until June 30, 1905, and receipts good until September 30, 1905, with order for secret works on the latter; also $40 in money and Odd Fellows receipts good until December 31, 1905, belonging to Homer O. Harris, member Lodge 529, B. of L. F., Mena, Ark., was lost in the Texas and Pacific Passenger Depot. If found please return to W. L. Harper, Secretary, Lodge 529, B. of L. F., Box 366, Mena, Ark.

Pocketbook containing traveling card and receipt, with order for secret works, belonging to W. T. Foster, member Lodge 147, B. of L. F., was lost recently in a Baden or Broadway car, St. Louis, Mo. If found please return to O. R. Shearer, Secretary, Lodge 147, B. of L. F., Box 132, Temple, Tex.

Pocketbook containing card and receipts for quarter ending June 30, 1905, also service letters and Y. M. C. A. card, belonging to Herman Trowbridge, member of Lodge 523, B. of L. F., Fremont, Neb., was recently lost. If found please return to E. E. Fay, Secretary, Lodge 523, B. of L. F., 420 Bell street, Fremont, Neb.

The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of May, 1905:

B. of L. F. Lodges, 263, $5; 272, $10; 388, $12	$27 00
O. R. C. Divisions	60 00
B. of R. T. Lodges	24 90
B. of L. E. Divisions	29 00
L. A. C. Divisions	9 00
L. A. T. Lodges	21 40
G. I. A. Divisions	13 00
L. S. to B. of L. F. Lodges (Chicago, Ill.)	31 25
Station, Memphis, Tenn	2 71
James Costello, Division 270, O. R. C	1 00
Employes of Madison Division, B. of L. E. of the C. & N. W. R. R	12 00
Grand total	$231 26

Miscellaneous.—Box of books from S. McMullin, of Savanna, Ill.; box of periodicals from W. D. Beck, of Winona, Minn.; 29 pillow cases from Lodge 43, L. S. to B. of L. F.; 25 pounds of smoking tobacco and a box of pipes from E. W. Putnam, of Lodge 187, B. of R. T.; one box of books from J. E. Simpson, of Lodge 122, O. R. C.

Respectfully submitted,
JOHN O'KEEFE,
Sec. and Treas., R. R. M. H.

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Acknowledgments.

The following persons desire to acknowledge receipt of payment of claims and to express their gratitude to the Brotherhood of Locomotive Firemen, as an organization, and to the individual members for kindness and courtesies extended:

Chas. D. Vest, Birmingham, Ala.
Mrs. Mary Kendrick, Syracuse, N. Y.
L. A. Klaffke, Missouri Valley, Iowa.
W. M. Doyle, Owosso, Mich.
Mrs. Anna L. Brundage, Hammondsport, N. Y.
Mr. and Mrs. S. Bennett, Stratford, Ont.
Mrs. August Waibel, Charleston, Ill.
Mrs. John B. Carpenter, Elmira, N. Y.
Mrs. William Snyder, Nevada, Mo.

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Halfway Up the Heights

I deeply sympathize with him
  Who's toilsome climbed to reach the top
Of Mount Success, and then by whim
  Of circumstance been forced to stop.

But then, since half the height he's scaled,
  I'd fain this altered phase let fall;
'Tis better to have tried and failed
  Than never to have tried at all!
    —Roy Farrell Greene, in Success.

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Beneficiary Statement

OFFICE OF GRAND SECRETARY AND TREASURER,
PEORIA, ILL., June 1, 1905.

To Subordinate Lodges:

The following is a statement of receipts in the Beneficiary Department for the month of May, 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	512 25	69	83 25	137	109 50	205	124 50	273	195 75	341	188 00	409	......	477	255 75	545	84 75	613	......
2	......	70	171 75	138	381 00	206	56 25	274	105 00	342	......	410	356 25	478	398 25	546	54 75	614	246 00
3	840 75	71	259 50	139	357 00	207	255 75	275	293 25	343	......	411	210 00	479	89 25	547	58 50	615	90 75
4	209 25	72	383 25	140	......	208	88 50	276	212 25	344	......	412	......	480	40 50	548	72 00	616	57 00
5	276 00	73	345 00	141	455 25	209	......	277	112 50	345	159 75	413	60 75	481	216 75	549	......	617	84 75
6	347 25	74	159 75	142	280 50	210	64 50	278	54 00	346	29 25	414	167 25	482	123 75	550	65 25	618	45 00
7	180 75	75	534 75	143	642 00	211	268 50	279	70 50	347	......	415	119 25	483	67 50	551	127 50	619	93 00
8	540 00	76	39 75	144	24 75	212	126 00	280	136 50	348	135 00	416	189 75	484	150 75	552	154 50	620	61 50
9	674 25	77	369 75	145	150 00	213	189 75	281	211 50	349	351 75	417	78 00	485	892 50	553	166 50	621	......
10	829 50	78	141 00	146	352 50	214	339 00	282	38 25	350	110 25	418	307 50	486	124 50	554	92 25	622	168 75
11	261 00	79	76 50	147	162 75	215	363 75	283	118 50	351	33 00	419	126 75	487	45 00	555	72 00	623	105 75
12	351 75	80	371 25	148	......	216	138 00	284	640 50	352	123 75	420	......	488	71 25	556	81 00	624	104 25
13	660 00	81	134 25	149	612 00	217	......	285	401 25	353	123 00	421	75 75	489	161 25	557	163 50	625	62 25
14	371 25	82	279 75	150	269 25	218	216 75	286	166 50	354	299 25	422	101 25	490	189 00	558	318 75	626	185 25
15	127 50	83	236 25	151	120 75	219	220 50	287	831 00	355	179 25	423	54 00	491	79 50	559	89 25	627	58 50
16	408 00	84	......	152	225 00	220	493 50	288	101 25	356	......	424	123 75	492	246 00	560	90 75	628	79 50
17	171 75	85	244 50	153	138 75	221	206 25	289	......	357	82 50	425	87 00	493	78 75	561	123 00	629	39 00
18	186 75	86	254 25	154	......	222	......	290	141 75	358	109 50	426	322 50	494	142 50	562	254 25	630	105 00
19	......	87	186 75	155	......	223	......	291	114 75	359	76 50	427	60 75	495	174 00	563	367 50	631	94 50
20	57 75	88	186 00	156	216 00	224	98 25	292	43 50	360	128 25	428	94 50	496	86 25	564	165 00	632	54 75
21	285 75	89	......	157	82 50	225	67 50	293	83 25	361	133 50	429	184 50	497	122 25	565	60 75	633	93 75
22	115 50	90	78 75	158	114 75	226	291 75	294	186 75	362	......	430	143 25	498	116 25	566	147 00	634	261 75
23	109 50	91	......	159	189 00	227	70 50	295	221 25	363	462 00	431	101 25	499	46 50	567	144 00	635	112 50
24	291 75	92	138 00	160	177 75	228	456 00	296	230 25	364	120 00	432	204 00	500	81 75	568	116 25	636	49 50
25	334 50	93	126 00	161	51 75	229	......	297	219 00	365	......	433	189 00	501	319 50	569	153 00	637	110 00
26	228 00	94	354 75	162	495 75	230	565 50	298	193 50	366	92 25	434	207 75	502	444 75	570	67 50	638	102 75
27	257 25	95	51 00	163	165 75	231	......	299	164 25	367	135 75	435	121 50	503	145 50	571	128 25	639	......
28	165 00	96	221 25	164	105 00	232	242 25	300	200 25	368	134 25	436	240 00	504	53 25	572	69 00	640	......
29	95 25	97	318 75	165	151 50	233	[illegible]	301	118 50	369	164 25	437	76 50	505	......	573	130 50	641	104 25
30	201 75	98	291 00	166	309 00	234	......	302	323 25	370	39 75	438	123 00	506	132 00	574	128 25	642	99 00
31	147 00	99	542 25	167	127 50	235	240 75	303	126 00	371	......	439	......	507	109 50	575	......	643	......
32	158 25	100	92 25	168	180 75	236	378 00	304	222 75	372	6 75	440	184 50	508	252 00	576	48 75	644	55 50
33	165 75	101	309 75	169	358 50	237	402 75	305	79 50	373	141 00	441	......	509	78 75	577	111 00	645	80 25
34	213 00	102	131 25	170	......	238	317 25	306	304 50	374	250 50	442	105 00	510	165 75	578	112 50	646	209 25
35	132 75	103	......	171	132 75	239	......	307	175 50	375	148 50	443	126 00	511	197 25	579	81 75	647	63 00
36	191 25	104	160 50	172	78 00	240	687 00	308	85 50	376	84 75	444	256 50	512	96 00	580	33 75	648	44 25
37	194 25	105	......	173	......	241	309 75	309	455 25	377	156 00	445	119 25	513	140 25	581	18 75	649	28 50
38	......	106	75 75	174	696 75	242	306 75	310	231 00	378	635 25	446	......	514	98 25	582	93 75	650	53 25
39	120 00	107	246 00	175	492 75	243	107 25	311	105 00	379	328 50	447	......	515	283 50	583	68 25	651	86 25
40	343 50	108	159 00	176	210 00	244	183 00	312	194 25	380	50 25	448	626 25	516	285 75	584	104 25	652	142 75
41	38 25	109	230 25	177	177 75	245	188 25	313	106 50	381	243 75	449	......	517	84 75	585	113 25	653	98 25
42	44 25	110	135 00	178	280 50	246	210 00	314	174 75	382	120 75	450	268 50	518	48 00	586	......	654	51 75
43	217 50	111	......	179	154 50	247	350 25	315	156 00	383	142 50	451	140 25	519	......	587	129 75	655	88 25
44	262 50	112	69 00	180	11 25	248	290 25	316	248 25	384	151 50	452	134 25	520	44 25	588	57 00	656	84 00
45	544 50	113	......	181	45 00	249	200 25	317	82 50	385	73 50	453	51 75	521	126 75	589	60 75	657	72 75
46	70 50	114	75 00	182	364 50	250	172 50	318	588 00	386	47 25	454	169 50	522	216 75	590	......	658	89 25
47	266 25	115	69 75	183	......	251	316 50	319	135 00	387	70 50	455	195 75	523	117 00	591	153 75	659	61 50
48	318 00	116	111 75	184	96 00	252	346 50	320	92 25	388	176 25	456	124 50	524	34 50	592	104 25	660	132 00
49	165 00	117	139 50	185	81 75	253	244 50	321	85 50	389	255 00	457	319 50	525	......	593	49 50	661	31 50
50	66 75	118	55 50	186	9 00	254	109 50	322	94 50	390	163 50	458	56 25	526	25 50	594	117 75	662	48 75
51	312 75	119	105 00	187	115 50	255	95 25	323	67 50	391	192 75	459	68 25	527	129 75	595	54 75	663	68 25
52	......	120	204 75	188	429 00	256	85 50	324	......	392	......	460	105 75	528	134 25	596	133 50	664	58 50
53	112 50	121	294 00	189	246 00	257	87 75	325	95 25	393	189 75	461	120 00	529	312 00	597	133 50	665	90 75
54	337 50	122	61 50	190	22 50	258	32 25	326	253 50	394	17 25	462	169 50	530	108 75	598	105 75	666	234 00
55	60 75	123	255 75	191	239 25	259	78 75	327	567 00	395	132 75	463	192 00	531	106 50	599	......	667	39 75
56	168 75	124	176 25	192	360 75	260	......	328	......	396	198 00	464	125 25	532	156 00	600	114 00	668	84 75
57	602 25	125	......	193	......	261	54 75	329	61 50	397	78 75	465	234 00	533	98 25	601	171 00	669	76 50
58	......	126	144 00	194	......	262	227 25	330	225 75	398	96 00	466	100 50	534	......	602	167 25	670	125 25
59	832 50	127	221 25	195	133 50	263	149 25	331	115 50	399	121 50	467	103 50	535	283 50	603	......	671	71 25
60	351 75	128	96 00	196	65 25	264	77 25	332	119 25	400	......	468	36 75	536	105 75	604	49 25	672	64 50
61	149 25	129	300 00	197	90 00	265	417 75	333	273 00	401	247 50	469	97 50	537	77 25	605	185 25	673	516 00
62	129 00	130	396 00	198	354 75	266	231 00	334	241 50	402	112 50	470	198 00	538	173 25	606	41 25	...	......
63	197 25	131	54 00	199	157 50	267	135 00	335	50 25	403	......	471	57 75	539	123 00	607	74 25	...	......
64	245 25	132	......	200	83 25	268	57 75	336	108 00	404	88 50	472	328 50	540	......	608	106 50	...	......
65	215 25	133	......	201	293 25	269	147 00	337	341 25	405	211 50	473	65 25	541	233 25	609	58 50	...	......
66	157 50	134	129 75	202	243 00	270	187 50	338	153 00	406	......	474	151 50	542	177 75	610	58 50	...	......
67	175 50	135	170 25	203	......	271	111 75	339	61 50	407	207 75	475	113 25	543	305 25	611	60 75	...	......
68	121 50	136	56 25	204	224 25	272	64 50	340	116 25	408	189 00	476	71 25	544	143 25	612	89 25	...	......

Received during month of May $107,142.25

Disbursed during month of May, account Beneficiary Claims ....

2....	$3,000	$6,000	$70,000.00
38..	1,500	57,000	
4....	1,000	4,000	
6....	500	3,000	

Respectfully submitted,

W. S. CARTER,
G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from April 30, 1905, to May 31, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid.
877	Martin Gruver	121	Disability	Jan. 7, 1905	Amputation left foot	$1,500	May 2, 1905
908	Lewis L. Beach	35	Death	Feb. 6, "	Derailing of engine	500	" 2, "
913	Charles F. Lyman	307	Disability	Apr. 12, "	Total blindness	1,500	" 2, "
922	Angus B. Rushton	233	Death	Feb. 27, "	Apoplexy	1,500	" 2, "
923	Herman A. Dodge	189	"	Mar. 6, "	Suicide	500	" 2, "
928	Daniel W. McMillan	442	"	" 8, "	Consumption of lungs	500	" 2, "
932	William F. McNamara	323	"	" 5, "	Pneumonia	1,500	" 2, "
916	William M. Burke	206	"	Jan. 1, "	Struck by switch engine	1,500	" 2, "
933	Joseph M. Wiegand	229	Disability	Apr. 11, "	Locomotor ataxia	1,500	" 2, "
833	John Shafer	228	"	Mar. 24, "	Bright's disease	1,500	" 2, "
882	Charles B. Reed	133	"	Apr. 11, "	Paralysis	1,500	" 16, "
939	Alexander Nairn	181	Death	Mar. 10, "	Falling from engine	500	" 16, "
940	Walter H. Hannon	73	"	" 8, "	Collision	1,500	" 16, "
941	William E. Lanker	311	"	Feb. 26, "	Falling under car	1,500	" 16, "
942	Edward F. Knapp	636	"	" 10, "	Pneumonia	1,500	" 16, "
943	Joseph F. Deitmeyer	188	"	Mar. 15, "	Struck by passing train	1,500	" 16, "
945	Joseph Hardy	144	"	Feb. 28, "	Typhoid pneumonia	1,500	" 16, "
946	Ludwig A. Klaffke	17	Disability	Apr. 24, "	Locomotor ataxia	1,500	" 16, "
947	William D. Loop	433	Death	Mar. 11, "	Crushed by engine and coal chute	1,000	" 16, "
948	James F. Fry	440	"	" 14, "	Consumption of lungs	1,500	" 16, "
949	William H. Kendrick	213	"	" 24, "	Typhoid pneumonia	1,500	" 16, "
950	William Snyder	371	"	" 23, "	Diabetes	1,500	" 16, "
952	Jacob H. Miller	287	Disability	" 18, "	Amputation left foot	1,500	" 16, "
953	E. K. Gerhard	287	Death	" 18, "	Derailing of engine	1,500	" 16, "
954	Howlett Caradine	201	Disability	Apr. 15, "	Blindness	1,500	" 16, "
956	William P. Quinn	412	"	May 3, "	Locomotor ataxia	1,500	" 16, "
957	Silas H. Brundage	463	Death	Mar. 7, "	Pneumonia	1,500	" 16, "
958	Alfred Bennett	38	"	" 7, "	Head crushed	500	" 16, "
959	Walter C. S. Hunt	319	"	" 26, "	Collision	500	" 16, "
961	Charlie D. Vest	426	Disability	" 24, "	Amputation left foot	3,000	" 17, "
963	Elmer E. Schrock	52	"	May 6, "	Consumption of lungs	1,500	" 17, "
964	Oscar A. Streeter	563	Death	Mar. 22, "	Fractured skull	1,500	" 17, "
965	Alexander Walker	39	"	" 17, "	Appendicitis	1,000	" 17, "
966	John B. Carpenter	242	"	" 26, "	Heart disease	1,500	" 17, "
967	Angus Shultz	524	"	" 19, "	Derailing of engine	1,500	" 17, "
968	William H. Bellew	43	Disability	Apr. 21, "	Consumption of lungs	1,500	" 17, "
969	Charles H. Sanford	253	Death	Mar. 21, "	Cholemia	1,500	" 17, "
971	Thomas W. Welsh	318	Disability	" 31, "	Amputation right hand	1,500	" 17, "
973	Dennis Doran	540	Death	Apr. 5, "	Appendicitis	1,500	" 17, "
974	Alto L. Wickes	299	"	Mar. 29, "	Derailing of engine	1,500	" 17, "
770	Paul A. Irmschler	80	"	Dec. 9, 1904	Consumption of lungs	1,500	" 17, "
976	Martin J. Glancey	364	"	Apr. 1, 1905	Heart disease	1,500	" 17, "
977	John L. Simpson	448	"	Jan. 22, "	Boiler explosion	1,500	" 17, "
979	Joe M. Deason	506	"	Mar. 26, "	Falling from engine	1,500	" 17, "
980	Frank G. Cornwell	544	"	Apr. 4, "	Burns	1,500	" 17, "
982	John H. Doyle	84	"	Mar. 18, "	Collision	1,500	" 17, "
983	Richard Reid	84	"	" 19, "	Appendicitis	1,000	" 17, "
985	August Waibel	187	"	Apr. 9, "	Heart disease	3,000	" 17, "
987	Ginkin Morgan	450	"	Mar. 29, "	Derailing of engine	1,500	" 17, "
988	William J. Smith	314	"	" 19 "	Consumption	1,000	" 17, "

50 death and disability claims, aggregating $70,000.00.

Pending Claims May 31, 1905.

49 death claims aggregating	**$69,000**
12 disability claims aggregating	**17,000**
Total of 61 claims aggregating	**$86,000**

Statement of Donation Claim Paid

From April 30, 1905, to May 31, 1905, Allowed by the Ninth Biennial Convention.

Claim No.	NAME.	Lodge No.	Death or Disability	Date of Filing.	Cause.	Am't. of Ins.	When Paid.
602	J. A. Mhoon	200	Disability	Sept. 20, 1904	This claim was irregular and did not come within the law, but was allowed and ordered paid by the Ninth Biennial Convention.	$500	May 10, 1905

Respectfully submitted,

W. S. CARTER,

G. S. & T.

Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending June 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1025	Harry Dike	389	Death	May 16, 1905	Derailing of engine	$1,500
1026	B. F. Goodnow	57	"	" 16, "	Striking bridge	1,500
1027	Arthur J. Stafford	360	"	" 17, "	Collision	1,500
1028	Edgar S. Abernathy	455	Disability	" 19, "	Compound fracture of ankle	1,500
1029	Harrison P. McBee	430	Death	" 22, "	Falling from moving engine	1,500
1030	Joseph Roberts	226	"	" 22, "	Falling from moving engine	3,000
1031	William Oltman	32	"	" 22, "	Typhoid fever	1,500
1032	Joseph Gale	246	"	" 25, "	Paralysis	1,500
1033	Charles M. Souers	462	"	" 26, "	Collision	1,500
1034	Paul Lee	572	"	" 26, "	Dysentery	1,500
1035	Arthur J. Duncan	129	"	" 29, "	Typhoid fever	1,500
1036	William Houghton	129	Disability	" 31, "	Locomotor ataxia	1,500
1037	M. A. Baird	386	Death	" 31, "	Derailing of engine	1,500
1038	Edward W. Blake	192	"	" 31, "	Falling from moving train	1,500
1039	William H. Phillips	202	"	" 31, "	Heart disease	1,500
1040	Alfred Seymore	444	"	" 31, "	Collision	2,000
1041	Sidney F. Bell	502	"	June 1, "	Collision	1,500
1042	Frederick W. Hammill	673	"	" 2, "	Brights disease	1,500
1043	Charles O. Sinclair	502	"	" 2, "	Collision	1,500
1044	John Watson	117	"	" 2, "	Heart disease	1,500
1045	Geo. I. Reid	15	"	" 3, "	Falling from moving engine	500
1046	J. T. Frank	141	Disability	" 5, "	Deafness	1,500
1047	Valeo Lambert	653	Death	" 5, "	Collision	1,500
1048	William B. Williams	408	"	" 5, "	Hemorrhage of lungs	1,500
1049	*Stanley L. Fry	......	"	" 6, "	R. R. accident	750
1050	M. P. Hagerty	177	"	" 6, "	Tetanus	1,500
1051	Albert Simmons	208	Disability	" 6, "	Paralysis	1,500
1052	George W. Gray	310	Death	" 6, "	Scarlet fever	1,500
1053	Elmer Deo	265	"	" 6, "	Smallpox	1,000
1054	Fred G. Coryell	401	"	" 7, "	Crushed beneath engine	2,000
1055	Ulysses S. Babb	447	"	" 7, "	Derailing of engine	3,000
1056	Ira J. Sawyer	169	"	" 8, "	Consumption	1,500
1057	Edison P. Allison	139	"	" 9, "	Derailing of engine	3,000
1058	M. M. Miller	158	Disability	" 9, "	Consumption of lungs	1,500
1059	William J. Loeffler	129	Death	" 10, "	Typhoid fever	1,500
1060	Jeremiah Donovan	146	"	" 10, "	Derailing of engine	1,500
1061	Lloyd H. Canfield	566	"	" 10, "	Falling under moving train	500
1062	James W. Sheets	6	"	" 10, "	Derailing of engine	1,500
1063	Albert E. Morden	173	"	" 13, "	Derailing of engine	500
1064	William Fogarty	378	"	" 13, "	Falling under moving train	1,500
1065	Richard J. Costello	363	"	" 13, "	Cirrhosis of liver	1,500
1066	August Schroeder	25	"	" 13, "	Consumption of lungs	1,500
1067	Henry P. Derra	150	"	" 13, "	Appendicitis	1,500
1068	Lancely K. Scott	341	"	" 13, "	Collision	1,500
1069	Percy J. Eastwood	341	"	" 13, "	Collision	1,500
1070	Thomas Callahan	666	"	" 13, "	Heart failure	1,500
1071	Leroy L. Cooper	392	"	" 13, "	Derailing of engine	1,500
1072	John H. Mead	276	Disability	" 14, "	Amputation of right foot	1,500
1073	Otis Williams	534	Death	" 14, "	Measles—Tonsilitis	1,500
1074	Michael Monahan	264	"	" 14, "	Pneumonia	1,500
1075	Merton W. Piatt	169	"	" 14, "	Falling under moving train	1,500
1076	Clarence E. Webster	57	"	" 14, "	Crushed bet. engine and r'nd h	1,500
1077	E. I. Hull	6	Disability	" 15, "	Double fract. right hip and leg	1,500
1078	Floyd J. Ingalls	71	Death	" 15, "	Bronchial pneumonia	1,500
1079	Jay W. Wheaton	25	Disability	" 15, "	Amputation right foot	1,500
1080	Charles S. Elliott	175	Death	" 15, "	....	1,500

***Expelled member of Lodge 400. Claim compromised for $750.00.**

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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Beneficiary Assessment Notice No. 134.

To the Treasurers of Subordinate Lodges:

PEORIA, ILL., July 1, 1905.

Dear Sirs and Brothers:—You are hereby notified that assessments for death and disability claims are hereby levied as follows: For each beneficiary member whose name appears on the rolls of membership on July 1, 1905 (also for all beneficiary members having taken a withdrawal or transfer card after July 1, and for all members who died or were totally disabled since July 1), carrying a Beneficiary Certificate of THREE THOUSAND ($3,000) DOLLARS, you are required to forward the sum of FOUR DOLLARS AND FIFTY ($4.50) CENTS For those carrying a Certificate of TWO THOUSAND ($2,000) DOLLARS, you are required to forward the sum of THREE DOLLARS ($3.00). For those carrying a Certificate of FIFTEEN HUNDRED ($1,500) DOLLARS, you are required to forward the sum of TWO DOLLARS AND TWENTY-FIVE ($2.25) CENTS. For those carrying a Certificate of ONE THOUSAND ($1,000) DOLLARS, you are required to forward the sum of ONE DOLLAR AND FIFTY ($1.50) CENTS, and for each member carrying a Certificate of FIVE HUNDRED ($500) DOLLARS, you are required to forward the sum of SEVENTY-FIVE ($0.75) CENTS. Said remittances to reach the Grand Lodge not later than July 20, 1905, as provided in Section 62 of the Constitution.

Yours fraternally,

W. S. CARTER,
G. S. and T.

SPECIAL NOTICE.—All remittances must be made by BANK DRAFT, MONEY ORDER, OR EXPRESS ORDER. Beneficiary members initiated after July 1st are not liable for this assessment.

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Semi-Annual Grand Dues Notice, $1.25.

PEORIA, ILL., July 1, 1905.

To the Treasurers of Subordinate Lodges:

SIRS AND BROTHERS—You are hereby notified that you are required to forward to the Grand Lodge the sum of $1.25 for Semi-Annual Grand Dues for the six months ending December 31, 1905, for each beneficiary and non-beneficiary member whose name appears upon the rolls of membership July 1, 1905, also for all members having taken a final withdrawal card after July 1, and for all who died or were totally disabled since July 1. Said remittances to be forwarded so as to reach the Grand Lodge not later than July 20, 1905.

In making returns for the above Grand Dues, you will use the same set of statements upon which you make your returns for Beneficiary Assessment No. 134, which have been forwarded to the Treasurers of all lodges.

Yours fraternally,

W. S. CARTER, G. S.-T.

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LADIES SOCIETY of the B. L. F.

Agnes G. Strong—Editress.

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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From the Grand President.

Fiscal Year.

With the month of July comes the opening of the new fiscal year and the closing of accounts for the past, as well as the installation of the newly elected officers who are to serve for the year ending June 30, 1906.

It is hoped that each officer will have her books and accounts in such shape that they can be turned over to her successor and the work taken up in an intelligent manner.

While I am ready and willing to instruct the officers in their several duties, I shall hope that this year the newly elected officers will avail themselves of the information contained in the Constitution, and, before seeking information, consult the pages of the Constitution, where it is believed they will find a comprehensive answer to any question which might arise as to their duty or the mode of procedure in transacting the business of the lodge. The index in the back of the Constitution will, it is believed, readily direct the sister to the section governing the matter upon which she may desire information. The sooner an officer becomes familiar with the laws the better it will be for all concerned. It is desirous that our officers and members should read for themselves the various laws governing the Society, so that they may at all times know just exactly what is expected of them as members. The statement that "I did not know" can not be considered as a valid excuse. Ignorance of a law can never be accepted as an excuse for a violation thereof. Therefore, it is earnestly suggested that each newly installed officer will make an effort to become familiar with the various provisions of the Constitution, and especially those sections defining their several duties, so that should any question be raised during a meeting as to the proper action to be taken, there need be no doubt in the matter. In the case of a President, she should have a general knowledge of the laws, so that as the presiding officer she will never be at loss how to decide a question, or what instructions she should give an officer or member.

Lodges Disbanded.

Where a lodge disbands and its members desire to retain their membership in the Society, the laws providing for transfer cards should be complied with, as well as those governing the granting of final withdrawal cards. In exceptional cases the Grand President can transfer, by special dispensation, as a means of protecting the sister's membership, the sisters of a lodge, which is about to disband, to other lodges; but under ordinary circumstances it is desired that application be made for the transfer cards by the Secretary of the lodge to which the sister or sisters desire to transfer. By this means the records are complete and there can no question arise as to the standing of the member. As a rule, no lodge disbands on the impulse of the moment; and, therefore, there should be sufficient time to arrange for the transfer cards, as provided in Sections 109 to 115, inclusive.

Treasurer's Annual Report.

The attention of the Treasurers is directed to the provisions of Section 87 of the Constitution, providing for an annual report, showing the amount received and disbursed by her during the year, as well as the balance on hand July 1, 1905. This report to be approved by the Board of Trustees. It is hoped that no Treasurer will overlook this important duty, and no matter whether she succeeds herself or is succeeded by another sister, she should comply with this provision of law and file this report at the first meeting in July.

Appointive Officers.

As stated in preceding issues of the Magazine, there has been no change in the law governing appointive officers. In connection therewith attention is directed to Sections 71 and 81, respectively. The appointments are made by the President, subject to the approval of the lodge. This is a prerogative of the presiding officer, which should be respected by all lodges.

New Password.

The new password for the quarter ending September 30, 1905, has been sent to the address of the President of all lodges in good standing. A delinquent lodge shall not be entitled to the password until its delinquency has been paid. A President failing to receive the password should immediately notify the Grand Secretary and Treasurer. Requests for duplicate copies of the password should not be made of the Grand President, but to Sister M. E. DuBois, at Boone, Iowa, who transmits the same direct.

Expending Money.

The attention of the lodges is again called to the provisions of Section 129 of the Constitution, providing how the funds of a lodge may be disbursed. *Unless two-thirds of the members of a lodge* authorize an extraordinary expenditure, such as the purchase of an organ or piano, such expenditure can not be made. Lodges should distinguish between two-thirds of the members of a lodge and two-thirds of the members present at a meeting thereof. In the former case, if a lodge has thirty-six members, before an expense can be incurred, as referred to above, it will be necessary that at least twenty-four of the members, at a meeting of the lodge, agree thereto. In the latter case, a two-thirds vote of the members present at a meeting is sufficient to pass a motion requiring a two-thirds vote. In the expenditure of money for other than routine expenses, the law specifically provides that two-thirds of the entire membership shall authorize such expenditure.

The same rule will apply to the levying by a lodge of a special assessment for a special purpose. If a special assessment is levied by a lodge for the purpose of purchasing an organ or something similar, unless two-thirds of the entire membership of the lodge agrees thereto, payment of such special assessment can not be enforced.

Payment to Minors.

Attention is directed to the second paragraph of Section 59 of the Constitution, providing for the appointment of guardians before payment of claims arising under certificates issued by the Insurance Department can be paid to minors. Under no circumstances can the Grand Secretary and Treasurer make payment of death claims to minors, but arrangements must be made for the appointment of a guardian. The fees, if any, in connection therewith, must be paid by the beneficiary or beneficiaries.

Enforcement of Laws.

The officers and members of the Society should understand that it is the sworn duty of its Grand Lodge officers to strictly enforce the laws, without fear or favor, and not permitting personal likes or dislikes to in any way influence their respective action. Unfortunately some of the lodges or the members thereof seem to take it as a personal affront when a matter is decided contrary to their views. It is hoped that the sisters will understand that in deciding points of laws or modes of procedure, the officers of the Grand Lodge are impersonal, and are but doing their duty as understood by them and defined by the law-making body of the Society. The Grand Lodge officers can not waive any provision of law. If a Lodge thinks a certain law is a hardship, let it bring the matter before the next meeting of the Grand Lodge; but it should not feel its wishes have been slighted if the officers who have sworn to enforce the laws insist on a faithful compliance thereof by the lodges.

G. M. SARGENT, *G. P*,

Notes.

When you would speak evil of a sister, stop and see if you can repeat the obligation you have voluntarily assumed, and when you are through you will feel ashamed of yourself and your chilly words will be changed to words of love.

If the lodges would do more visiting with their neighboring lodges the spirit of fraternity would be broadened, and the social influence create more interest in the work, more pride in doing it well, and more zeal in the active duties of human life.

Don't forget the hearty handshake when you go to your lodge meetings. It will warm the heart and comfort the soul, for good and active work.

Let us build up the Ladies Society of the B. of L. F. and hold up the hands of those who are engaged in the work. Construction, not destruction, should be our motto.

May every member of the Ladies Society seriously consider what the Society has gained by their membership. You have been permitted to enjoy its privileges, and what have you given in return? Is there one human heart happier today because of your kind words or good deeds which you have rendered in the name of our noble Order? If not, why not? Surely there have been plenty of opportunities.

Send the News.—All matters of interest, such as initiations, socials, etc. If you have not time to write full particulars, just send us the facts and names, and we will do the rest.

Kindness and genteelness should ever characterize members of the L. S.

"We can not believe too strongly in our one society and in our ability to respond to every legal call made upon it."

When you find a woman decrying her own fraternal order, it is well to make a note of it, as she will be found unworthy to trust in confidence or with a secret. The obligations of our Order can never be taken on or off like a garment, or laid aside when not needed, or put on when needed. They are as fixed, solemn and eternal as the principles of everlasting truth; and to defame them is as base as the slander of a progenitor.

It is a noble and great thing to cover the blemishes and to excuse the failings of a sister; to draw a curtain before her stains, and to display her perfections; to bury her weaknesses in silence, but to proclaim her virtues upon the housetop.

It is a grave mistake to suppose that we always succeed through success; we much oftener succeed through failures.

It is a pleasure to note the kind words of approval and encouragement contained in the letters from the brothers in the June issue of the Magazine. The brothers can lose nothing by being a friend to the Ladies Society, and they can do our Order a world of good.

The names and membership of the "Big Ten" will be published in the August issue of the Magazine.

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Our Grand Counselor Has Gone to Hawaii.

Accompanied by his Secretary, Brother Donahue, our Grand Counselor, Commissioner-General Frank P. Sargent, has gone on a trip. Mr. Sargent sailed from San Francisco June 7th, on the steamer "Mongolia," for Honolulu. A personal inspection of immigration affairs will be made by Brother Sargent. I am sure that the sisters will wish him a pleasant trip and a safe return home.

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Duty in Our Order.

Many things depend on time and a determination for their value. And as we value our organization, we should, in its present form, have a closer relationship among our sisters. It is generally the idle who complain that they can not find to do that which they fancy they wish. But it is a fact that people can generally find time for that which they choose to do. So it is not really the time, but it is the will that is wanting. Our duty is to make ourselves useful in our Auxiliary and not shut ourselves up and lead an indifferent and selfish life. The former because we neglect the importance of our obligation and don't familiarize ourselves with the requirements of the Constitution and By-Laws. And the latter because we do not manifest the proper spirit of sisterly love and interest that we so solemnly promise, in conducting ourselves in such a manner as will secure the confidence and esteem of each other. We should all make ourselves useful by giving our individual time and attention to our auxiliary and become familiar with what is occurring in our meeting.

It seems that some of the sisters do not understand what this Order is for, and they seemingly forget the obligation taken at the sacred altar. It would be a good idea to have the obligation committed and repeated at every meeting.

We have a fine President, and it should be our aim to attend as regularly aud assist her as much as possible. Do not let her shoulder the whole responsibility of the success of the meeting.

Sisters, be sisterly and always sneak a kind word for all; and it should be the ambition of every member of our Order, so far as lies in their power, to bring happiness to their sisters. To be good companions for one another we should practice the lessons taught us in our beautiful initiatory work. Elevate our standing in society as women, and surround ourselves with an influence whereby we can realize the brilliancy of our beautiful motto, "Friendship and Charity." Did you ever stop and think what grand words friendship and charity are? Friendship seeks no advantages or return. It is nevertheless a fact that the woman who is a true friend to others always has true friends. It will be found that the wrecks that line the pathway of life are women without friends. They have not been friends, and as a result thev have no friends. The first requisite is to be a friend. Like begets like. Friendship begets friendship.

So, sisters, let us live up to our motto and see what pleasure, peace and happiness await us. Do not gossip, for many hearts are made miserable and driven to desperation by gossip. We need in our Order self-sacrificing workers, not self-satisfying critics. Fault-finding and contentious persons are deadly enemies to any organization. Much of the unpleasantness of life would be avoided if all would examine their own lives, instead of seeking out those of others. All members should be devoted and loyal one to another, and success will prevail. In the past if anything has been said or done to displease you, forgive and forget it. Love one another and work for the good and welfare of our beloved Order. For we are all children of the great Father. Hoping that there will be an increase in membership at our next meeting, I will extend best wishes to all Societies of the L. S. to B. of L. F. Yours in Friendship and Charity. ELLA M. MILLS,

Secretary of 194.

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Another New Sister.

It is with pleasure I announce the birth of our infant sister Lodge at Prescott, Ariz., Thumb Butte, No. 192, consisting of seven charter members. I received a call to organize this lodge in November, but owing to rainy weather, washouts and sickness, I had about given up hopes of having the pleasure of organizing at Prescott.

There were fifteen names sent in on the charter, but several were out of town or too ill to attend.

I arrived at Prescott on May 4th and found a lot of discouraged women. On account of a severe snowstorm I was compelled to organize next day.

I trust all Grand Officers and sister lodges will encourage this little band of women in their noble work. Yours fraternally, MINNIE DAVENPORT.

Tucson, Ariz.

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The Tenth Annual Meeting of the Ladies Societies of Kansas.

The tenth annual union meeting of the Ladies Societies of Kansas was held May 24th, 25th and 26th, in Fort Scott, under the auspices of George H. Nettleton Lodge, L. S., 127, whose members left nothing undone that would make this one of the most successful union meetings the State has ever had.

Too much praise can not be given the sisters for their earnest effort, and they have proved themselves forever royal entertainers. We feel we owe them our many thanks.

Especially would we mention Sister M. L. Spafford, the President of 127, who was elected permanent chairman and presided over the union meeting in a very pleasing manner.

We also wish to compliment the "team," which was composed of eight charming ladies, who put the initiatory work on in a very graceful manner, after which they gave a drill composed of some very pretty figures.

We had the pleasure of having with us

five sisters from No. 68, Monett, Mo. Come again, sisters, and you will always receive a hearty welcome.

Sister Lynn Flynn, of Riverside, Kansas City, No. 90, was elected State Secretary, and Mae L. Lawton, of McKeen's Pride, Chanute. Kas., was elected State President for the ensuing year.

After a three days' session devoted to business and three evenings of pleasure we parted, wishing each one well and hoping to meet again in 1906 in Kansas City, Kas., where our next meeting will be held.

With best wishes for all.

MAE L. LAWTON.
Past State Secretary of Kansas.

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Another New Ladies Society.

On March 26, 1905, I had the pleasure of visiting Rutland, Vt., for the purpose of organizing Green Mountain Sisters, Lodge 198, with twelve charter members. Sister Amelia Schmeltz, worthy President of Fort Orange Lodge, No. 113, accompanied me as assistant.

Arriving at the station, we were met by a committee of brothers from Marble City, No. 353, and escorted to dinner. After dinner we proceeded to the hall, where I had the pleasure of meeting a gathering of ladies that were in waiting to become members of the Ladies Society. The sisters start out under very encouraging auspices. Much credit is due the brothers who gave such valuable assistance and kindly paid all their expenses of organizing and agreed to do all they can for the sisters. Such encouragement means success. The sisters will do all they can to please and show the brothers how much they appreciate their kindness by giving them their support.

In the evening a banquet and reception was given in the lodge-room in honor of the Albany ladies, which was largely attended by both sisters and brothers. A fine program was rendered, consisting of vocal and musical selections.

The new lodge is composed of a band of sisters who are good workers, and I feel assured they will make a success of their Society. I desire to express to the Green Mountain Sisters, No. 198, and also the brothers of Marble City, No. 353, my sincere thanks for the many courtesies shown Sister Schmeltz and myself on the occasion of this visit.

ELIZABETH TRUAX,
P. P., Fort Orange L. S. 113.
Albany, N. Y.

Welcome, Golden Gate Companion No. 197.

On April 16th I left home to be in San Francisco on the 18th, to organize a new Ladies Society of the B. of L. F. We organized Golden Gate Companion, No. 197, with fourteen charter members present, and all of them seemingly good workers.

The first day was taken up with arranging meeting hours, election and installation of officers. The second day we proceeded with the regular order of business, with the newly elected officers in their respective places.

After the close of the session we met jointly with the brothers, refreshments were served and all had a pleasant time.

May this new sister lodge continue to grow and prosper in harmony and peace.

LUCINDA B. STEVENSON,
President of Flower of the Desert, L. S.
Needles, Cal.

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Welcome, Pilot Lodge No. 122.

Sister M. A. Brisnaham and myself left St. Paul Friday morning, May 26, for Breckenridge, Minnesota, and were met at the train by Sisters Adams and McHugh.

On Saturday morning we met at K. P. Hall, where Pilot Lodge 122 was organized, with fifteen charter members and four or five applicants ready for the next meeting. Sister Clara McHugh is the newly elected President, and Sister Adams, Secretary; Sister Parks, Treasurer, and Sister Teressa Kahlellek, Collector. There is no doubt in my mind as to the success of Pilot Lodge, for they have a very competent staff of officers; in fact, some of the older lodges had better get wide-awake or some of these new sister lodges will outshine them.

While we were in the city we were pleasantly entertained at several dinners at the homes of Brothers and Sisters Adams, Ross and Parks. On Saturday evening the ladies of Pilot Lodge entertained the brothers of C. D. Sherman Lodge, No. 433, at a banquet. Covers were laid for fifty. All felt happy, and a most pleasing social spirit was present, of which the brothers of Lodge 433 contributed a large share by their brilliant after-dinner speeches. Sister Willson responded with a recitation, which was enjoyed by all present.

On Sunday evening, it being the regular meeting of C. D. Sherman Lodge, the ladies again served refreshments, which were thoroughly enjoyed by all present.

On Monday afternoon we departed for our homes. May success and prosperity ever be with Pilot Lodge, is my earnest wish. Yours in Friendship and Charity,

MARION H. MURRAY.

St. Paul, Minn.

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Joint Meetings.

I feel constrained to pen a line upon a subject that must be of interest to all members of the Ladies Society and the B. of L. F. in connection with joint meetings.

We have some very pleasant times in holding joint meetings with No. 48, B. of L. F., once each quarter. We have a very short secret session, then serve refreshments, and the remaining part of the evening is spent in dancing and having a general good time. We have gained several new members as a result of these meetings. We make it a point to invite some one who is eligible to either order, and in this way they become acquainted and get interested in society.

To defray the expenses of these meetings we give a joint steamboat excursion each summer, and the proceeds usually more than cover the expenses of the joint meetings for the winter. Our next boat excursion is July 18th, on steamer "J. S." We would be pleased to have you all come and go with us.

We have ninety members and have a good field to work in, but our members are all housekeepers and are kept pretty busy, and as long as our lodge is in such good condition we don't hustle very much. We also have over $300 in our treasury.

A MEMBER, Hazel L. S.

Peoria, Ill.

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Letters from Friends.

FROM L. S. 132—(*Minnie L. Faust, McComb, Miss.*) Thursday evening, April 6th, the ladies of Pride of Ensign Lodge, No. 132, celebrated their second anniversary, with a small but very enjoyable reception at the home of our Worthy Vice-President, Mrs. E. T. Butler. The rooms were artistically draped with the colors of our Order. Music and games served to while away the hours, oh so pleasantly.

What the attending brothers enjoyed so much was the two course luncheon, daintly served by the President, Miss Bessie Brewer, and Mrs. Butler, assisted by Mr. Butler.

At 11:30 all bid good-night, thanking the ladies for a very pleasant evening and wishing our lodge continued progress and prosperity.

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FROM L. S. 89—(*A Member, Salt Lake City, Utah.*) As I am a great reader of our Magazine, I noticed a quite interesting article in our March issue, on page 461, where one of our sisters gives it "good and a plenty" to our brothers of Lodge 178, at Salt Lake City, Utah.

My sister speaks through the columns of the Magazine, that many of our brothers are quite ignorant of the true meaning of their Ladies Auxiliary, and that they think ladies lodges a terrible nuisance. I always understood that ignorance stood for needing knowledge, and if such is the case, we need it, and if the sister who wrote the article in the March issue will admit it, she well knows that 178 has the best brothers in the west, and she need not hesitate in telling so.

Every brother of 178 is too willing to give a helping hand to the Ladies Auxiliary—that is the reason that they are "broke," they gave us the money. I remember how they worked selling tickets a year ago for our entertainment, and they certainly did well, and all they received in return was a sandwich and a dish of ice cream. They decorated the hall and washed the dishes and helped do all the cleaning after the entertainment was over. What more could be asked of anyone? I wish to recall the great day when our Lodge was organized and the officers were installed; the brothers of 178 paid for our charter fee and for the grand supper we all enjoyed afterwards.

Now that the members of 178 deserve praise and many thanks for favors past due, I hope they will continue in the future, as they have in the past, and we will always be ready to lend a helping hand to them. My sister also states that we were to have a joint ball February 23; sorry to say we have never seen a joint ball, but why did we not have a joint ball? Because some of our sisters thought themselves better than others, and they were actually insulted, when our brothers asked them to serve a little punch at the ball or some suitable refreshments. Now, what can be expected, if a few members in your Society are always pulling the other way and still think they are "it." I say the way to overcome the difficulty is to let them alone and let the majority go ahead, and in that way you will soon overcome the difficulty.

I hope I have said enough to overcome the impression made by the letter in the March issue, and want to extend best wishes to the Brotherhood of 178, and may they prosper in this new year of 1905. And trust that the different Societies may not be misled by the letter from one of our sisters.

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FROM L. S. 147—(*Mrs. Annie Aylmer, San Antonio, Texas.*) While Blue Bonnet Lodge has been silent for some time, we have not lost interest in the Ladies Society. If the brothers would only encourage their mothers, daughters, sisters and wives to join us, there would be no reason why we could not be the largest and best Ladies Society connected with this great Brotherhood.

We extend thanks to the brothers of Davy Crockett, No. 145, and Almo, No. 263, for their assistance in helping us make our mask ball of February 7th, a success both financially and socially.

But with our pleasures come sorrows. We are sad to relate the death of Bro. Geo. Craig's mother, who died a short time since. Many floral emblems attested the sympathy of hosts of friends. Conspicuous among them was a floral wreath from the Ladies Society. We extend our heartfelt sympathy to her sons and daughters in this sad hour of their bereavement, and commend them to our Heavenly Father who knows their sorrow, and who alone can heal the broken hearts. May He in His own good time take them to that city where death and parting are unknown.

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FROM L. S. 86—(*Sister A., Laramie, Wyoming.*) I will make an effort to write a letter for our Magazine. Do not think we are all asleep because you do not hear from us very often. We are very much awake with a membership of twenty-five all active, hustling members: who are always on the watchout for the welfare of the Order.

We had a very pleasant gathering February 19th, when Brother Chas. Maier was with us and gave a very pleasant and instructive address to our Society, and to the members of Black Hill Lodge. After which an elegant luncheon was enjoyed by all present.

We expect Brother Maier to give a stereopticon lecture in May which we hope will be a success both financially and socially.

The 20th of this month we intend to give our Brothers a square meal and incidentally increase our funds.

On the 22d of this month the Brothers gave their annual ball, to which we were invited guests.

When we were organized we were named "Jewel," but from indications the past month, some of our Brothers do not seem to think of our society as their precious jewel.

I hope to write again soon, and a better letter. Hoping that you will receive a better letter from Sister B. in your next issue.

With the very best wishes for success for our new Editress.

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FROM L. S. 139—(*Laura L. Brewer, Pocatello, Idaho.*) La Belle Lodge, No. 139, L. S. of the B. of L. F., was organized February 20th by Mrs. Callie E. Cave, President of the lodge at Ogden, Utah, with Mrs. Grace Morsehead as assistant. We met at 11 o'clock at the Firemen's Hall and were organized by 3 o'clock, ready for a trial of our new work.

We feel that we will have to call on Sister Cave for much advice, as we are all new at the work yet and feel the need of help. The following officers were elected: President, Cora L. Rusk; Vice-President, Alice Knowles; Past President, Jennie Burns; Collector, Ethel Laing; Treasurer, Mamie Peake; Secretary, Laura L. Brewer; Warden, Emma Rovelstad; Conductor, Rebecca Coleman; Guards, Annie Hurl and Ida Williams; Board; Sisters Lamb, Knowles and Peake.

The brothers of Clark-Kimball Lodge, No. 113, donated us $50 for an organization fund and paid our hall rent for a year.

Just equal that if you can. Brother Peake has done pioneer service in our behalf and is deserving of all praise and commendation for his untiring efforts.

We give our first annual ball March 31st and hope it will be the first of many pleasant social events.

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FROM A BROTHER OF NO. 62—(*Carbondale, Penn.*) The members of White

Rose Lodge, No. 180, impelled by the power of reciprocation for courtesies shown them when they organized, gave an entertainment to the brothers of 62 on the evening of February 23d, and also invited the sisters and brothers of the different lodges in this vicinity to be present at the entertainment, but owing to prevailing conditions at these lodges only the members of 20 and 208, of Susquehanna, could come, and those lodges were well represented.

The President of 180 bade the sisters and brothers a cordial welcome to their first entertainment. It is incidents of this character that banish discord and go to establish a perfect concord that is so essential to the success of any organization.

Early in the evening a most bountiful repast was served, after which we were favored with vocal and instrumental music, recitations and readings. This was followed by dancing, and all who attended are loud in their praise of the ability of the Sisters of White Rose Lodge as royal entertainers.

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FROM L. S. 161—(*Magazine Correspondent, Toronto Junction, Ontario, Canada.*) As I read with much interest, from time to time, letters from the different lodges of the Ladies Society, with enthusiastic reports of various socials, etc., I feel that we would be "octopus" indeed if we did not "contribute our mite" along that line.

We held our fourth anniversary April 20th, and I need not say—as success always attends a united effort in any organization—Maple Leaf Lodge was equal to the occasion. Invitations had been issued to B. of L. F. 262 and their families. Those who possibly could encouraged us by their presence, and personally I thought the brothers of 262 were so generous in their patronage, two lodges of L. S. might be sustained, but our laws say one to each B. of L. F. Lodge, and those who compiled them were farseeing as to results.

A high-class programme was provided, Bro. George Wark, P. M., of 262, acting as chairman. P. P. Sister Richie, on behalf of the lodge, presented Sister Jessie Monck, who has been Secretary of the Lodge since its inception, with an easy chair and address expressing appreciation of her services, and that the choicest blessings of life might be hers. Sister Monck could only say "Thanks," but if any of you have ever met with a like surprise you will know it meant volumes.

The President also was the recipient of a lovely bouquet—the choicest in bud and blooming of the glad "Easter-tide"—with its fragrance wafted on every side, but more lasting will be the kindly feelings which prompted the sisters to recognize the efforts she is able to put forth towards the success of Maple Leaf Lodge.

But the evening was fast passing, a few of the sisters disappeared from their places, and suspicions arose that all was not told, but soon the curtain was let fall.

"And the bubbling and loud hissing urn
Throws up a steaming column,
And the cups that cheer, but not inebriate
Wait on each,
So let us welcome peaceful evening in."

The sisters had provided refreshments, which were quickly served, and dancing followed for those who desired.

Letters of regret were read from Grand Vice President and Chairman of the Grand Executive Board, Sisters Moore and Ball, at not being able to be present, and we must say that our "cousins over the border" have the advantage of us in having the presence of Grand officers at their social functions, as you will all agree with me, such is a "red-letter day" in any organization, and it seems to give fresh inspiration to the faithful few who carry on the work.

It is a matter of regret there are not more lodges of the L. S. in Ontario and the Provinces. As per Directory, there are 47 B. of L. F. Lodges, and only seven of the Ladies Society, and there are many places where its existence would receive hearty support.

Many of us take our holiday trip on the C. P. R. to the coast and in making short stops look about us to visit a sister lodge, but they are so few and far between, "fraternity grows cold in the search."

An effort was made for the formation of a lodge in Calgary, N. W. T., fifteen names were secured, with the expectation some one would be sent to organize, or complete the work, which has not yet been done.

Perhaps the sister Editress in the next issue of the Magazine could throw some light on the subject, as we appreciate its columns for valuable information, as well as practical advice.

FROM L. S. 36—(*A Member, Sayre, Pa.*) On the twenty-fourth of March we had the extreme pleasure of having a visit from our Worthy Grand President, Sister Sargent. Autumn Leaf Lodge, No. 36, held a special meeting to greet our Grand Officer and to listen to the words of wisdom and counsel which she would give us. We had an enjoyable meeting and my greatest wish is that those who were enabled to hear her will live up to the teachings she gave us, and then there is no reason why our lodge should not prosper and reap a large reward. Our Worthy Grand President is certainly a faithful and conscientious worker for the L. S. If we would all work for the Society as she does and live up to its teachings we could not find fault with each other.

These kind words of advice she left with us: "If you can not say kind things of a sister, be silent; then there will be no spirit of ill-will or unkindness. Live up to your motto, 'Friendship and Charity.' And be ye faithful and loyal to each other, then you will receive your just reward."

I was sorry that all the sisters did not get the benefit of her excellent address.

The sisters of 36 desired to have her stay longer with us than she did, but we hope and pray that it will not be long before she can visit us again. I will bid you all good-by, and may God be with Sister Sargent until we meet again and clasp her hand again in fraternal friendship.

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FROM L. S. 188—(*Mrs. Louise Rush, Alexandria, La.*) I, a member of Juniper Lodge 188, beg just a small space in which to tell you of our little lodge. We are prospering nicely.

On February 21st we gave our first masquerade ball, which was very successful, both socially and financially. It was largely attended by some of Alexandria's very best people. Some wore very pretty gowns, while others wore very comical costumes.

All thoroughly enjoyed themselves, and at 10.30 "masks were off," and each and every one repaired to the dining-room, where they were served with sandwiches, pickles, cakes, chocolate and coffee.

As a result we have a neat little sum in our treasury, which we are very proud of, as our little lodge is not quite three months old as yet. We are grateful to the brothers of 598 for their untiring aid and ready assistance, which they so cheerfully gave us.

On Mardigras night, March 7th, the brothers gave their first masquerade ball, which was a success in every way.

We are expecting some new applications in the very near future and we will gladly welcome them in our little band. We hope to receive every eligible wife, mother and sister before very long. Best wishes for all the lodges of the Ladies Society and B. of L. F.

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FROM L. S. 45.—(*Two Sisters, Galveston, Tex.*) As we have not seen anything in the columns of our Magazine from Oleander Lodge, we thought we would write and let the sisters know that we were still alive and prospering. We have a new candidate for our side-saddle for our next meeting, and we hope to have more in the near future. We gave our first social hop, at which we served dainty refreshments and had a general good time. We want to thank the brothers of Gulf City Lodge 115 for the kind assistance they rendered us, and especially do we thank Bros. Shellhorn and Fuller for the good work done at the cloak-room and at the door. To all sister lodges we wish good luck and prosperity, and to the noble Brotherhood of Locomotive Firemen.

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FROM L. S. 36—(*President of Autumn Leaf, No. 36, Sayre, Pa.*) I have been reading the letters from the sisters in the Magazine, and thought perhaps they would like to hear from us. We are having a nice time in our lodge now. We enjoyed a visit from our worthy Grand President in March, which was of much profit to us, and hope her visit will be repeated in the near future. We are still progressing, two new members being initiated at our last meeting and six more on the way. At the close of our last meeting the sisters were pleasantly surprised to find a number of the brothers in the anteroom, laden with good things to eat. They spread the tables and waited on the sisters, and afterwards washed the dishes. To any of the unmarried sisters in want of a husband we would recommend Bro. Falsey, of Weaver Lodge 379, as he is a splendid dishwasher. The way the brothers did things was surprising to most of the sisters, as we did not know that they knew how. We have had to part with our Secretary, Sister Blakeslee, as she has moved to Buffalo. She will be very much missed by the entire Lodge, as she has been one of its best workers. It is the wish of every sister that she may find plenty of friends in her new home. We should always be ready to do for the B. of L. F., as the lives of our dear ones are protected by it. Let us be more friendly and charitable one towards the other, and the Ladies Society will prosper wherever it may be.

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From L. S. 56—(*A Member, Tucson, Ariz.*) We, the sisters of Tucson, desire to extend greetings to all our past and present Grand officers of the Ladies Society of the B. of L. F.

Tucson was the birthplace of the Ladies Society. The old home of the Sargents still stands where the ladies met to organize such a noble sisterhood.

I like to think of the Order as a large family gathering, for there we meet the wives, daughters, mothers and sisters.

Our Society was organized on April 22, 1899, by our Grand Counselor, Frank P. Sargent, with twenty-six charter members. We have had many trials and obstacles to overcome, but I can truthfully say that with the help and encouragement of our good brothers we have overcome all trials and are getting along smoothly now. We always hail with joy the announcement of a new Society, for it proves that the B. of L. F. are interested in our cause and in the cause of "Friendship and Charity."

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From L. S. 5—(*Lucinda B. Stevenson, Needles, Cal.*) Just a few words about our little Society, Flower of the Desert, No. 5. For almost a year we have had only five members in our town, and we have worked and struggled under the most trying difficulties, but now we have five applications and are looking forward to more encouraging circumstances.

I think each Brotherhood fireman with a wife, sister or mother should encourage them to join the Ladies Society, for the time is sure to come when they will feel the good which will surely result from being a member of our Society.

With best of good wishes for all sister lodges.

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From L. S. 139—(*A Member, Pocatello, Idaho.*) Well, if there is space in our lovely Magazine for a few items of interest in connection with our newly organized Ladies Society, here in "the city of the West," Pocatello, Idaho, I should like to mention that after a five-months' siege trying to secure enough members to get a charter, we—La Belle Lodge, No. 139—are organized, with fifteen nice young sisters' names attached thereto.

Sister Callie Cave and Sister Grace Morsehead came up from Ogden, Utah, to start us on our way, and after three meetings we are getting along nicely. The sisters of 139 are loud in their praises for the lovely sisters that came from Ogden, and if these sisters are ever in need of anything they can feel assured that help and assistance will be gladly given them by the sisters of 139.

I think that Callie E. Cave would make an ideal organizer for the West, and I think we would have a great many more Ladies Societies if we had such an earnest worker in the field. There are three more B. of L. F. Lodges in this State, and we would like to see a Ladies Society in connection with each, so that we could hold reunions once a year, and thus help each other and have good times.

The sisters of La Belle Lodge want to thank the sisters who organized them, and also extend a vote of thanks to Brother Henry Peake, who worked so faithfully the past five months to have an auxiliary to Clarke-Kimball Lodge, No. 113. It is the result of his labor that La Belle Lodge was organized.

Now, hurry, sisters. There are about thirty-five more who are eligible in the field. We can get them if we get "a move" on us.

We have a fine lot of officers elected. They are: Cora Rusk, President; Alice Knowles, Vice-President; Laura Brewer, Secretary; Ethel B. Laing, Collector; Miriam Peake, Treasurer; Sisters Knowles, Peake and Lamb, Trustees.

With best wishes and good luck for the L. S. and to La Belle Lodge.

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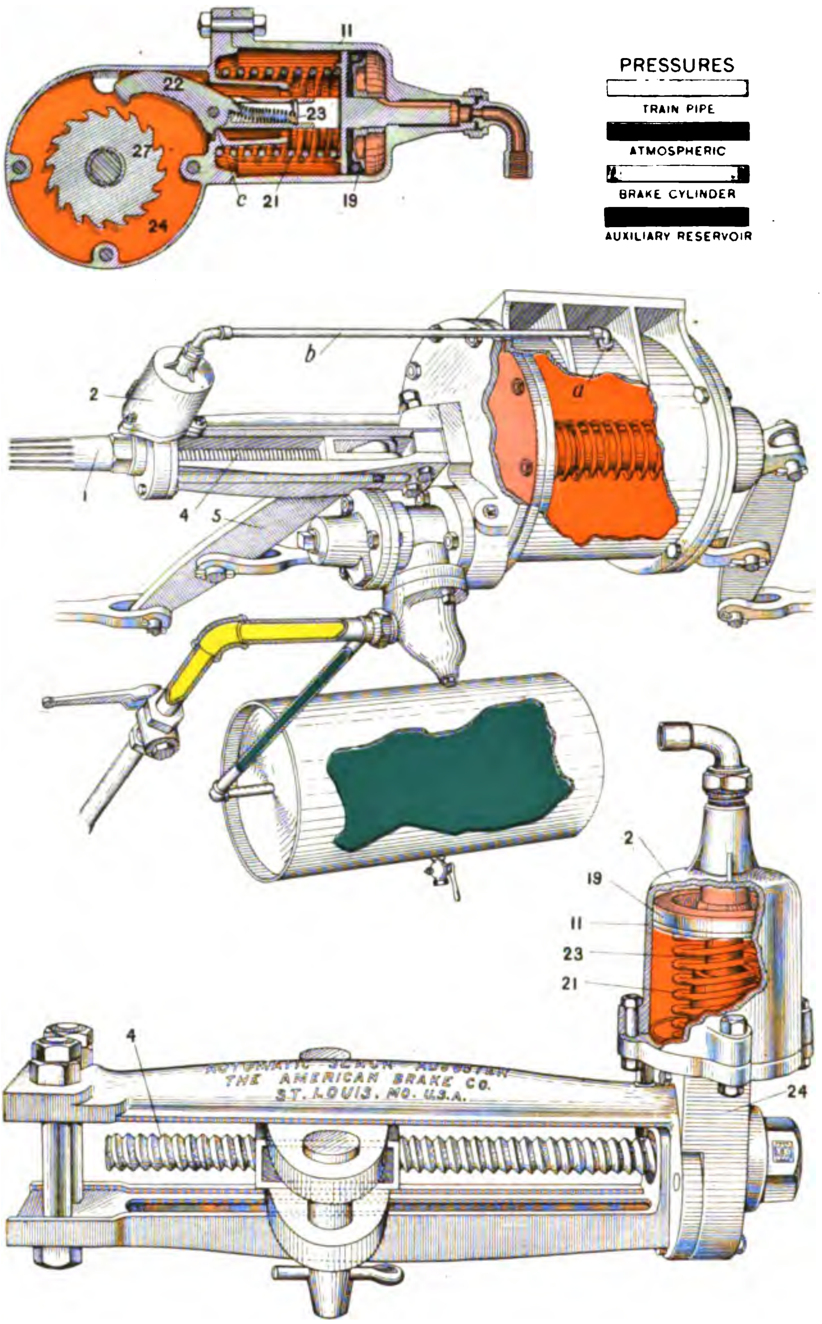
Death Report.

Lillie E. Wolhaupter.—Lodge 173; died March 21, 1905; cause, appendicitis. Insurance, $200.

Emma Carie.—Lodge 2; died May 16, 1905; cause, result of burns received by the explosion of a tank of a gasoline stove. Insurance, $200.



Locomotive Firemen's Magazine Educational Charts

WESTINGHOUSE AIR BRAKE SERIES

PLATE XXII—AUTOMATIC SLACK ADJUSTER

Copyright 1905, by John F. McNamee

Brotherhood of
Locomotive Firemen's Magazine
Technical Department
John F. McNamee
Subscription Price $1.50 per year

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Plate XXII—Automatic Slack Adjuster.

Plate XXII of the Westinghouse Air-Brake Series of the Locomotive Firemen's Magazine Educational Chart shows sectional and perspective views of the automatic slack adjuster.

The automatic slack adjuster has few parts and its operation is simple. The ratchet wheel *27*, contained within the casing *24*, is secured upon the screw *4* and operates to turn the screw *4* when engaged by the pawl *22* which is attached to piston stem *23*. The piston *19* within the slack adjuster cylinder *2*, when operated upon by brake cylinder pressure, compresses the spring *21* and moves the pawl *22* into position for engaging the teeth of ratchet wheel *27*.

The operation of the automatic slack adjuster is as follows: Port *a* in the brake cylinder is so located that so long as the predetermined piston travel in the brake cylinder is not exceeded the brake cylinder piston will not uncover this port and the adjuster therefore remains inoperative. When, however, the brake shoes become sufficiently worn or undue slack or lost motion occurs in the brake rigging as to permit of the brake cylinder piston exceeding the predetermined travel, the port *a* being uncovered and open to brake cylinder pressure, this pressure in the brake cylinder passes through port *a* and the pipe *b* to the automatic slack adjuster cylinder *2*, forces piston *19* outward, compressing the spring *21* and moving the pawl *22* into position for engaging the teeth of ratchet wheel *27* within the casing *24*.

Upon releasing the brake, the brake cylinder piston returns to its normal position, and as soon as it passes port *a* in the brake cylinder the pressure in the automatic slack adjuster cylinder *2* escapes through pipe *b* and port *a* into the brake cylinder, thence out through the nonpressure head to the atmosphere. Upon the escape of air pressure above piston *19* in the automatic slack adjuster cylinder *2*, spring *21* forces piston *19* to its normal position, whereupon the pawl *22* engages the teeth of ratchet wheel *27*, turns the screw *4*, which, by means of the connection to the lever *5*, reduces the distance between that end of lever *5* and the slack adjuster cylinder *2*, thereby shortening the travel of the brake cylinder piston, reducing the slack or lost motion in the brake rigging and causing the brake shoes to be brought closer to the wheels.

Piston *19* in the automatic slack adjuster cylinder *2* in returning to its normal position carries the pawl *22* with it until a projection *c* in the cylinder engages a lug on pawl *22*, which causes the pawl to turn on its pivot and disengage itself from ratchet wheel *27*. When the pawl *22* is in this position if desirable the adjustment of the screw *4* may be made by hand.

Pyle National Electric Headlight.

The highly interesting, instructive and educational series of articles on the "Pyle National Electric Headlight" by Mr. J. Will Johnson, of the Pyle National Electric Headlight Company, which have been published in the Magazine during the past few months are concluded with Part VII in the current issue.

Beginning with the September number of the Magazine, a series of questions and answers on this electric headlight will follow, and it is hoped that the interest created by the articles already published will be manifested by a goodly supply of questions.

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No Such Thing As Poor Coal.

From remarks made by Mr. T. F. Adams, general master mechanic of the St. Louis Southwestern, at the Master Mechanics' Convention, we conclude that firing locomotives has become a fine art on the Southwestern. Mr. Adams said:

"There is nothing in the country today in the operation of railroads that is of more interest than the question of fuel. The education of the engineer and the fireman in the use of fuel is one that does away with the setting out of trains, engines failing on the road, delays on cinder pits, cleaning fires, etc. It has been demonstrated beyond a reasonable doubt that the excuse of an engine failing on the road because of poor fuel is not tenable, from the fact that there is not any fuel used in the country today that I know of that, if properly used, will clinker, and I believe the word clinker is not the proper word to be used in connection with the sand pit. It should be ashes. As a matter of fact, if the cinder is burned up there will be no lumpy material. We all agree where our trains are delayed from two to three hours, as the case may be, on account of engines not steaming, poor coal, etc., it is a serious difficulty to the management, as well as a source of annoyance to the motive power officials.

On our road we take into consideration the education of the engineer and fireman in the fuel question. We adopted a method under which, if the engine loses any time on the road due to the engine not steaming, we bring the engineer and fireman into the office and ask each the cause. If the statement is made that it was on account of poor fuel, we ask him to explain what he intends us to understand when he says poor fuel, and in that manner we bring out his idea of it, and instruct him accordingly. It has had a wonderful effect—the effect has been that we have run our 20 switch engines, 20x26 engines, four days and four nights without cleaning the ashpan, and we have shaken down the fire out of the engine in 15 minutes. We have run a 20-inch engine on the road on a run of 250 miles with Illinois coal, and have not shaken the grates or cleaned the ashpans, and at the expiration of the trip we have shaken down the fire out of the engine in 15 minutes.

I believe today that one of the most important subjects for this convention to consider is the intelligent use of fuel, not the economical use of fuel, because intelligent use of fuel results in economy.—Railway and Locomotive Engineering.

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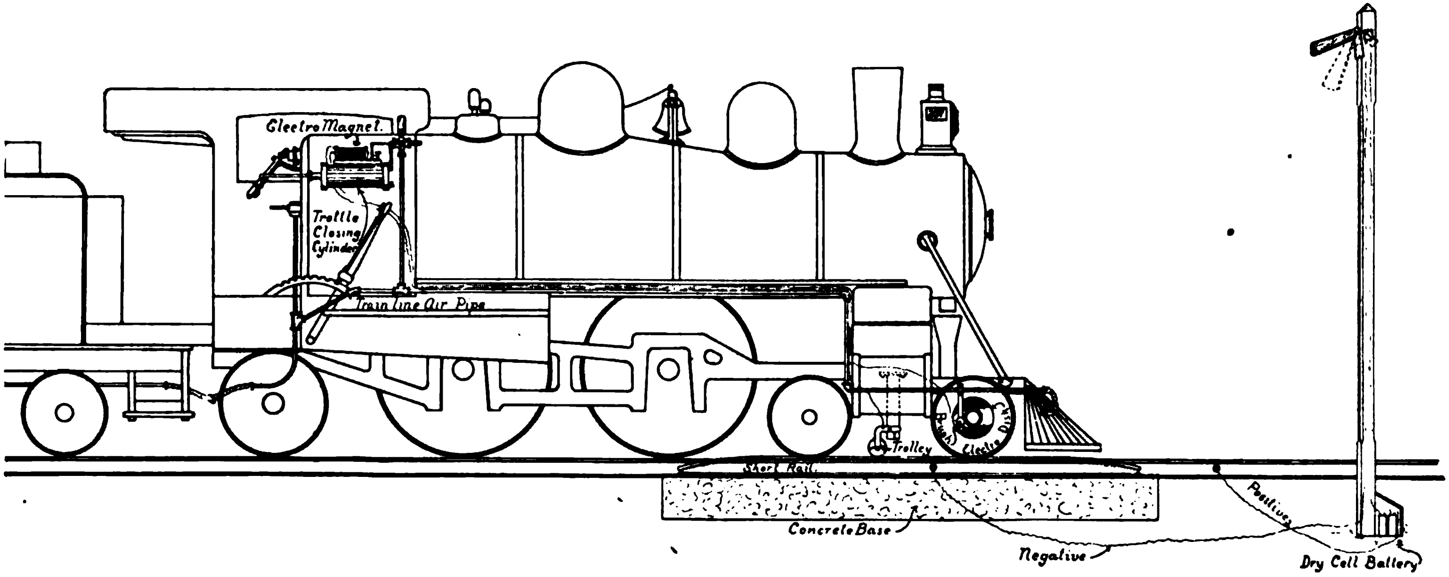
Automatic Locomotive Control.

The illustrations herewith are of a device controlled by electricity and operated by compressed air which is designed to prevent a train from passing a certain point when signals are set at danger, as in the case of railroad crossings, open drawbridges or other places of danger, and without derailment of the train. This device was invented and patented by Mr. J. E. Stiegelmeyer, of Indianapolis, Ind., who describes the merits of his invention as follows:

"The shocking accidents which have occurred on railroads fully equipped with the block signal systems of the most improved type and in working order, have shown very forcibly that between these signals and the throttle of the locomotive, which they are supposed to control, is an unreliable human intermediary. The perfect system should therefore be one capable of acting directly on the throttle, when the signal is ignored or erroneously interpreted by the engineer.

"Many systems have been invented but they are all open to the same objection, namely, that they are liable to destroy the watchfulness of the engineer, but this objection does not apply to the system illustrated herewith, for it is so arranged as to increase rather than diminish the vigilance of the engineer.

"Every time a signal is ignored the locomotive is automatically stopped and at the same time a record is made in the signalman's tower telling the exact second



Automatic Locomotive Control

it occurred and which the engineer must explain at the end of his run.

"The mechanism employed in this system is very simple and is clearly indicated in the detail view. It is what is termed an 'Automatic Locomotive Control.'

"The controlling power is electricity and the operating power is compressed air, taken from the train-line pipe. There is a battery at the bottom of the signal post. The negative element is run to the top of the signal post to a plate of copper. On the semaphore blade is placed a roller arm which comes in contact with the plate of copper when the signal is set at 'block.'

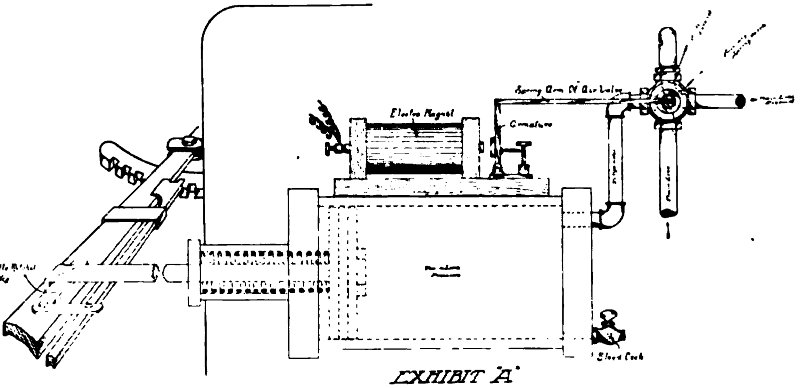


EXHIBIT 'A'

Automatic Locomotive Control

The negative element then leads down the signal post and out to a short rail which sets directly in the center of the track. The positive element is taken direct to the main rail.

"It will be noticed there is no circuit formed yet because there is a distance between the short rail and the main rail. On the engine frame and directly behind the pilot is connected a small wheel, termed a trolley wheel, which comes in contact with the short rail in the center of the track. On an axle of the engine truck is placed a copper disc with an electric brush facing against it and held in place with a small spring. In the engine cab on the boiler is placed a throttle closing cylinder, the piston of which is connected to the throttle lever by a throttle ratchet key. The air is taken from the train-line pipe up and into the cylinder through a four-way spring-arm air valve which is controlled by the armature of an electric magnet that is placed on top of the throttle closing cylinder.

"With the engines and signals equipped in this manner, any engine attempting to pass a signal set at block will be brought to a stop. The trolley wheel coming in contact with the short rail and the engine truck wheel coming in contact with the charged main rail completes the circuit, thus energizing the magnet, which withdraws the armature, thereby releasing the spring-arm air valve, allowing the air to simultaneously escape from the throttle closing cylinder and train-line pipe and automatically closing the throttle and setting the brakes, thus bringing the train to a standstill.

"On the other hand, the signal being at clearance, the roller arm is in the position as shown in the dotted lines of Exhibit 'B,' preventing the battery from energizing the magnet and allowing the train to proceed.

"Some of the advantages derived from it are: In case the engineer is dead or asleep and the signal is set against him, the train is automatically brought to a stop without any property loss to the company or injury to anyone on the train. In case the train breaks in two the engine is shut down. Should an air hose break, or through any fault on the part of the engineer he wastes his air, his engine is shut down. For any reason whatever, should the pressure in the train-line pipe be reduced, the throttle will work in harmony with the brakes, for as the brakes are set the throttle will close.

"The object of this invention is to throw a safeguard around the derail for the traveling public as well as the company, by bringing the train to a standstill before it reaches the derail, that is, if the signal is set at block.

"It can also be used to great advantage at drawbridges, tunnels, or to protect a

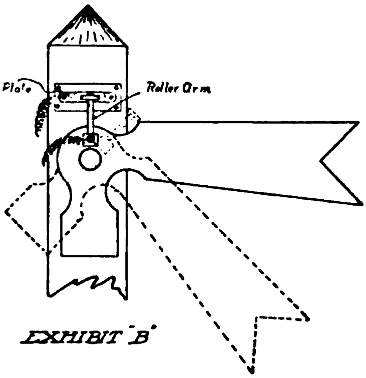


EXHIBIT 'B'

Automatic Locomotive Control

train while standing at a station discharging passengers, as by setting the distant signals at block any train coming in either direction is stopped before it reaches the station. It can be connected to switches or any signal. If for any reason the conductor wishes to shut the engine down he can do so by opening an angle cock or the conductor's brake valve. It throws a safeguard around engines while standing in the roundhouse, as by having no air pressure on them the throttle valve is held closed by the lack of air in the throttle closing cylinder which allows the piston to move forward, actuated by the spring, which unlocks the throttle valve lever and draws it closed. If the air pump on the engine breaks down and the engineer is compelled to run his train without air he can do so by simply disconnecting the throttle ratchet key."

In the operation of extremely fast trains it is just as essential to maintain a signal equipment in proportion to the requirements of such conditions as it is to increase the weight of the rail in proportion to the weight of the engine. The speed of trains being sought to be established at the present time demands that every safety device and precaution with which the railroad companies can surround their operation be adopted. In the maintenance of such furious speed as is represented by an average of 70 to 75 miles per hour, normal observation on the part of the engineer is very liable to fail in some instances. It is, therefore, necessary that it be possible for persons noticing impending danger to bring same to his attention by infallible methods. His eyes should not alone be depended upon to observe the danger of wrongly displayed signals. Any mechanism that will fill this want should be welcomed, not only by the railway managements of the country but by the people as well, and in view of the horrible disasters resulting from this long felt want and the incident loss of life and treasure, it would seem as though any device promising to fill it would be cheap at almost any cost.

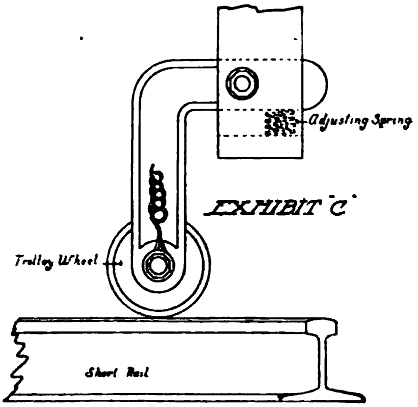


EXHIBIT 'C'

Automatic Locomotive Control

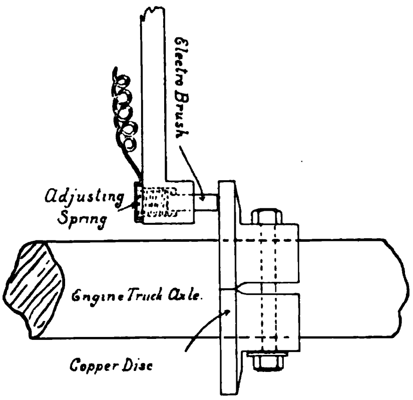


EXHIBIT 'D'

Automatic Locomotive Control

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Communication Between Rapidly Moving Trains.

An invention whereby a person on a rapidly-moving train can converse with one on another train, also in motion, or with an operator or other person in an office or tower contiguous to the right of way within a certain radius, has proven successful. The inventor is an Indiana man by the name of Edward McClintock.

The invention was tested on the lines of the Indiana Northern Traction Company, between Marion and Wabash. Metallic brushes extending from the bottom of the cars touch a small steel rail between the rails on which the cars are operated, and communication is maintained in this way. Cars equipped for the test were run over the road, and the inventor, in company with officials of the road, looked after the details of the work of making it in person. Mr. Barry, general manager, and Mr. Smock, auditor, declared that the invention was all that was claimed for it.

Three systems of signals are used in communicating—telegraph, telephone, and light bulbs. A more elaborate test will soon be made. Mr. McClintock claims that his invention will eliminate all future danger of collisions.

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*Saving Coal on Locomotives.**

Reducing the final cost of the amount of coal used to produce the total hauling power on a given system of railroad can be accomplished in two ways—either by reducing the quantity of coal burnt, maintaining the same quality as now used, or using a lower grade of coal, cheaper than that used up to the present time, the quantity being equal or even greater, but the total cost being lower.

The price of coal in France is very high compared with the price of coal used in America. The conditions of traffic are not the same in the two countries. French companies do not compete with each other, except in some few cases; our most crowded divisions are double-track lines. Maintaining schedule time is, of course, a duty to fulfill on our roads, as anywhere else, but one of the first duties to require from enginemen is that they save coal as much as can be done in safe limits.

For America, I presume that the first thing to do, in addition to keeping time, is to gain it, by any means, in order to clear up the lines as quickly as possible and insure thus a better use of rolling stock and locomotives. This can only be done at the expense of coal. But yet, within certain limits, there must be some possibilities of saving coal by a circumspect application of some of the French principles.

Let us examine, first, how to reduce the quantity of coal burnt for the same service, supposing the quality of the coal to remain the same as it is now.

It seems difficult to suppose that a large railroad could not find on its territory or in the neighborhood more than one sort of coal. American coals, as I know, belong to only two different classes, viz., bituminous and anthracite; but it is evident that in each of these classes the coals must differ one from another according to the quantity and nature of volatile products and ashes. In a general sense, bituminous coal, when burning, distillates differently from the anthracite, and forms a far better and stronger coke, and this is a good opportunity to save coal if the fireman is able to govern his fire properly. But, on the other hand, bituminous coal gives fusible ashes, and this is a bad point, since fusible ashes form caking clinkers, which obstruct the grate. Therefore, if only one sort of combustible, bituminous or anthracite, can be available on the system, I would suggest trying some different samples of it separately, and seeing what they give as to quantity and nature of ashes and volatile product—a very simple laboratory experiment will ascertain it. And then it may be advisable to mix some of them so as to obtain a mixture better than either of the elements composing it. This is what we generally do in France for the mixture of different coals.

If the two kinds of coal can be obtained at the same point, it will be so much the better, and the mixture will be easier. In some parts of the United States it may perhaps be a good and economical practice to mix petroleum refuse with splint coal or anthracite. In fact, the two principal things to obtain in a mixture are nonfusible ashes and a coke not too hard, not too much split, but very compact, so that it may constitute what may be called the frame or the skeleton of the fire on the grate.

In France, the best mixtures are obtained when composed as follows: 60 per cent. of caking coal, 20 per cent. of gas coal and 20 per cent. of splint coal (caking, gas and splint coal are English terms.)

The caking coal gives a good strong coke, but it has a tendency to produce clinkers; this tendency is overcome by by the action of the two other coals, which give dissolving ashes.

The gas coal gives a great quantity of

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*By A. Saillot, Inspector, Ouest Railway, France, in The Railway Age.

volatile products, which carry the heat into the upper parts of the firebox and forward part of the flues; but this coal, as well as the caking coal, is somewhat hard to light; the lighting is done by the splint coal, which gives long flames and lights the whole mixture rapidly. This latter coal is very light; when used alone on the grate it responds too readily to the draft, and it is drawn to the front end, but the difficulty is overcome by the mixture of this coal with the others, which are heavier.

In the combination of any mixture it is, of course, necessary to consider the price of the elements entering into it, including the cost of handling and transportation and the possibilities of using it properly according to the form and the construction of the grate and the boiler. In fact, the price of coal, pure or mixed, should be calculated according to the number of heat units practically available in the boiler, and I think it is the best method to adopt in the purchase, the preparation and the use of large quantities. A second solution would consist in increasing the proportion of slack coal, screenings or mine run in the total of coal consumption, assuming that lump coal is now exclusively used.

Up to 1881 no screenings or slack coal were used in French locomotives; the drivers would not hear of it. Nowadays they burn up to 70 per cent. of slack in some cases, the remaining 30 or 40 per cent. being briquettes, lump coal or even mine run.

The best way to use slack coal consists in having on the grate a good fire base well framed with lump pieces or briquettes before starting the train. This fire base must be kept in good order all through the run. A good and rational preparation of the fire before starting is a very important factor; I may say that it is half of the saving in coal consumption.

The thickness of the fire is not uniform on the grate; it is higher on the sides and the rear part. This is important, too, especially when using a coal or mixture containing a great quantity of volatile products.

From time to time it is advisable to throw some broken lumps or briquettes on the frame of the fire, and to operate the charging of the fire with slack coal on the same places; one shovelful in the middle of the grate and another in the front part will do for four or five other chargings. This is the general method used here, but it is widely modified according to the varying conditions of work and kind of fuel.

If proper care is taken to govern the fire it is possible to use the following proportions:

1. Lump coal and mine run half and half, and 20 per cent. proportion of slack or screenings for express trains or heavy freight.

2. Mine run and slack, half and half, for ordinary trains, passenger or freight, with a good starting fire made of lump or briquettes.

3. Slack or screenings, with a slight proportion of mine run for switching locomotives.

This is about what we do in France, except that we use more briquettes than lump coal. In some of our stationary boilers, at shops or water pumping stations, we use also a mixture of slack coal and smokebox cinders gathered in roundhouse yard pits, and it does very well. The average consumption on the French systems is 12 kilograms per kilometer for passenger, and 13 kilograms for freight.

The two solutions referred to would require some intelligence and ability on the part of enginemen. There is no doubt that American firemen are able to fulfill all the necessary conditions if they are encouraged, and if they receive good suggestions concerning the work to be done. It is, of course, possible to require from these men the necessary ability and willingness; discipline and close watching are good means, but I believe that the best argument is money. I think the only way to effect economy in coal is to induce the enginemen to take care of their fires. It may be a good thing to prepare the coal according to the best methods known, but it would be of no use if this coal were used in a careless manner.

Would the French method of firing be good in America? I can not tell now. The thickness of fire, frequency of charging and the form of the bed of coal on the grate differ too largely according to many varying conditions, such as load of train, speed, quality of coal, capacity of boiler, etc. But I am sure that firemen would employ the best method, once shown to them, if they had any interest in doing it.

I advise the introduction of a coal premium system. I do not mean altogether the French system of coal premiums, which I consider too complicated for American railroads. This system is based on the allowance of coal consumption per kilometric ton, calculated for each type of engine, each sort of train and each line. In some companies this allowance varies according to the season, and is greater in winter than in summer. When the quantity burnt is below the allowance, the enginemen receive a premium of so much per ton. On the Ouest Railway this premium is four francs (80 cents) per ton; some years ago it was eight francs ($1.60); on the Paris-Lyons-Mediterranean it is ten francs ($2) per ton; on the Paris-Orleans it is eight francs ($1.60). When the quantity burnt is above the allowance some companies reduce the wages of enginemen by a certain amount per ton; generally this reduction is equal to the reward per ton.

I believe that the system of allowance of a certain amount of coal per kilometric ton is liable to errors, even when care is taken to vary it according to class of engine, kind of train, etc. This method is very complicated and requires extensive bookkeeping.

I would advocate something of that sort, but arranged on another basis. For instance, I would rather suggest keeping an account of coal burnt on one division by each engine and then taking the average coal consumption per ton mile for each group of locomotives doing the same service. This average would constitute the allowance, and this allowance in a new form would then be determined by the men themselves on their own work, without any possible contest, and without trouble for the officers. There would be a reward per ton below the mean consumption of the group.

It seems certain that every man will be interested to do his best to keep the consumption of his locomotive below this average, and an automatic reduction of the average, that is to say, a reduction of the total consumption on the division will result. The amount of the reward per ton should be based on the price of coal and be in proportion to it and to the average wages of the men. It would be a good practice to pay this premium every three months, for instance, as they do on the Est Railway, so that it may constitute a good sum of money.

Besides the premium given to the men, the quantity of coal burnt would constitute for each of them an individual record, an account of which should be taken for future promotions.

This method is given as an example of what may be adopted; a further and complete inquiry on this subject may result in a transformation of it.

Coal premiums suggest regularity premiums, especially in American traffic. In France the reward per minute gained varies as follows in the different companies:

Frs. 0.15 (3 cents) to frs. 0.50 (10 cents) for express trains.

Frs. 0.10 (2 cents) to frs. 0.30 (6 cents) for ordinary passenger trains.

Frs. 0.08 (1 3-5 cents) to frs. 0.20 (4 cents) for freight trains.

In some companies, the P. L. M. for instance, the loss of time determines a corresponding reduction of wages.

I am not able to give any opinion on the introduction of this system in American practice without knowing all the conditions of the problem.

We have seen briefly what could be done first to prepare coal conveniently before using it; and second, what may be done to induce the men to use it properly. To facilitate their work I should place in the first rank the adjustable blast pipe. We use it as a rule in France.

Some very careful experiments made over long periods of time on certain locomotives, with the same crews, first with adjustable blast pipes and second with permanent nozzles, have shown economies averaging up to 5 per cent. in favor of the former.

I know that American engineers do not like it because of its complicated construction. Being personally interested in the matter, on account of the adjustable blast pipe patented in my name last year, I can not do better than to advise asking information from the Paris-Orleans Railway about my apparatus mounted on the locomotive No. 1771, of Baldwin type and construction.

Everybody knows what is the effect of scale on the rate of evaporation per pound of coal. It is, therefore, very important to wash out boilers properly at convenient intervals. These intervals should not be too long, especially when water is not pure; but in another way it should not be too short, because of the fatigue of the tube plates, flues, fittings, etc., due to the contraction of metal. In France they wash out every boiler after 1,500 kilometers for passenger traffic and 1,000 kilometers for freight. I consider that it is a little too often, but an exact opinion on it can not be given without knowing the nature of water to be treated. In this connection, I may say that I consider it proper to send the feed of injectors right through the steam in the barrel. The mud is deposited directly, and it is collected more easily.

The cleaning of flues is also very important for the transmission of heat from hot gases to the water of the boiler. In France the cleaning of flues is made by special men at the roundhouses, but the firemen generally realize the importance of this precaution and they prefer to do it themselves.

Much has been said concerning compounding. No one can deny that this type of engine reduces the coal consumption. I know that in America compounds are considered as "coal savers and money losers." But this question is too broad to be treated in a few lines; besides, it does not treat of the problem I have to answer, as I presume I have to deal with existing locomotives. I take them as they are and not as I would like them to be.

Feed water heaters are also good coal-saving contrivances when used under proper conditions, but they are not efficient everywhere and under all conditions.

My last opinion on the question of coal saving is that it is not a mechanical question—I mean to say, a question of new apparatus—but it is almost entirely a question of close attention to the ways in which and means by which the actual apparatus are governed.

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A New Department.

Beginning with the September issue of the Magazine, Mr. J. Will Johnson, the author of the series of educational articles on the "Pyle National Electric Headlight" which have been published in the Magazine during the past few months, will be pleased to answer any questions relating to the care and operation of this electric headlight in a department to be inaugurated for that purpose. It is hoped that our members and all other readers who desire a knowledge of the Pyle electric headlight will not hesitate to ask any questions with a view to familiarizing themselves with its mechanical features and gaining a thorough knowledge of its operation and maintenance.

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American Locomotive Company to Build Automobiles.

The American Locomotive Company has made arrangements for the manufacture in this country of the Berliet automobile, one of the best known French cars. Although one or two foreign designed cars are at present built in part here, this is said to be the first instance of an American concern making a foreign car with American material and by American labor, complete in every detail. The construction of a specially equipped plant for the manufacture of the Berliet machines will be started immediately, and it is expected that the cars will be in the market early next season.

President Pitkin, of the company, in an interview, said: "Cable advice has been received by us from our special representative that negotiations have been completed with the manufacturers of the Berliet automobiles at Lyons, whereby we have secured the sole rights to build the cars in the United States and Canade. By the terms of the contract, all specifications, drawings, etc., are to be given us so as to permit of our making an exact reproduction of the French machine. We will also have the advantage of all data pertaining to any improvements, etc., which may be developed by the French firm. Our representative has been in Europe for nearly twelve months past for the purpose of thoroughly investigating the automobile situation, and the Berliet car has been chosen in view of its extreme simplicity and of what we believe to be its suitability for American roads. In the first instance we will build a plant in Providence, R. I., adjacent to our Rhode Island Locomotive Works. The plant will be under the supervision of the superintendent of our Rhode Island works. The initial output will be about two hundred cars. The first machines are to be 40 horsepower and 25 horsepower, and are to be built exclusively for private purposes. Later we will make automobile trucks for heavy transportation use."

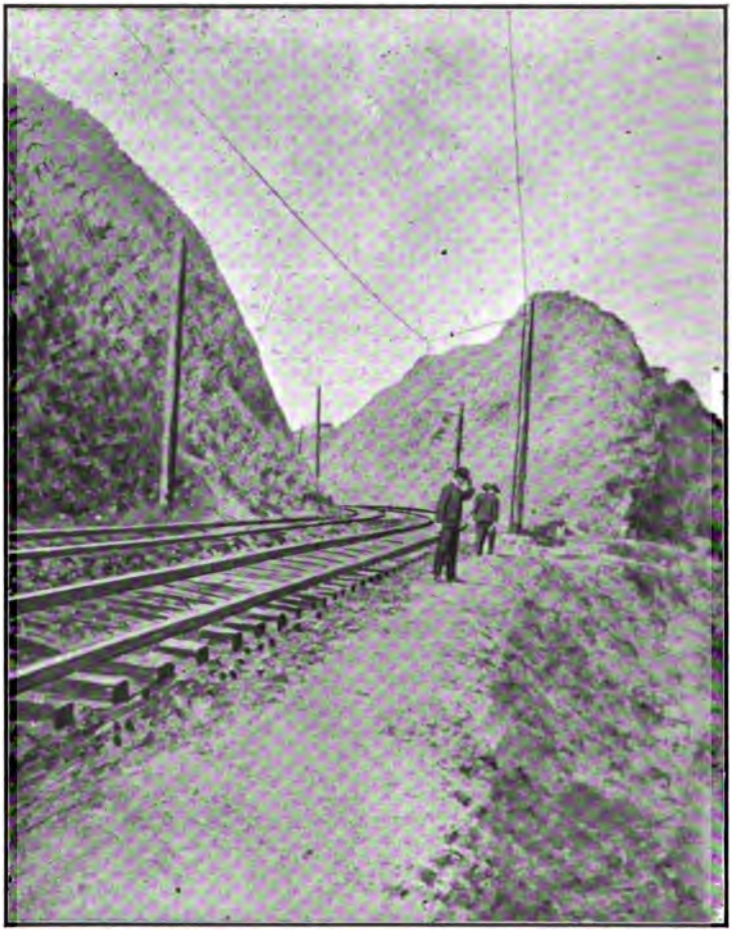
Referring to the details of the Berliet car, Mr. Pitkin said: "The car is equipped with a 4-cylinder gasoline motor, the cylinders of which are cast in pairs without joints. The frame, shafts, axle, etc., are nickel steel, which gives a maximum of strength with a minimum of weight. The moving parts, contact pieces, etc., are made of tempered steel. All the working parts are enclosed. The gear wheels operating the cam shafts, the water circulating pump and magneto, also the governor, are enclosed in a special oil-tight case communicating with the crank case.

The centrifugal pump is on the side of the crank case very near the radiator and under the cylinders, which arrangement does away with much superfluous piping. The radiator and water tank are combined. The fan forms part of the flywheel which causes a powerful draught around the engine and through the radiator. The consumption of fuel is exceptionally low."—The Railway and Engineering Review.

*Changed from Steam to Electricity.**

The most extensive and costly piece of railway work made in connection with the street railroad systems of San Francisco, Cal., during the past twelve months is now nearing completion, and will shortly be in operation.

This work has involved the changing of



SHOWING VERY DEEP CUT WHERE EASTERN ENTRANCE OF OLD DUMMY ROAD WAS a steam dummy road into an electric one. For the past twenty years a steam dummy route has connected with the California Street Cable System at the end of that thoroughfare, and extended clear on out to the ocean beach at the Cliff House. Three trains were run regularly over this road, giving half hour service. This line was owned and controlled by the United Railroad Company. Originally, the construction of the last mile of the steam road cost a great deal of money, and was attended with many engineering difficulties.

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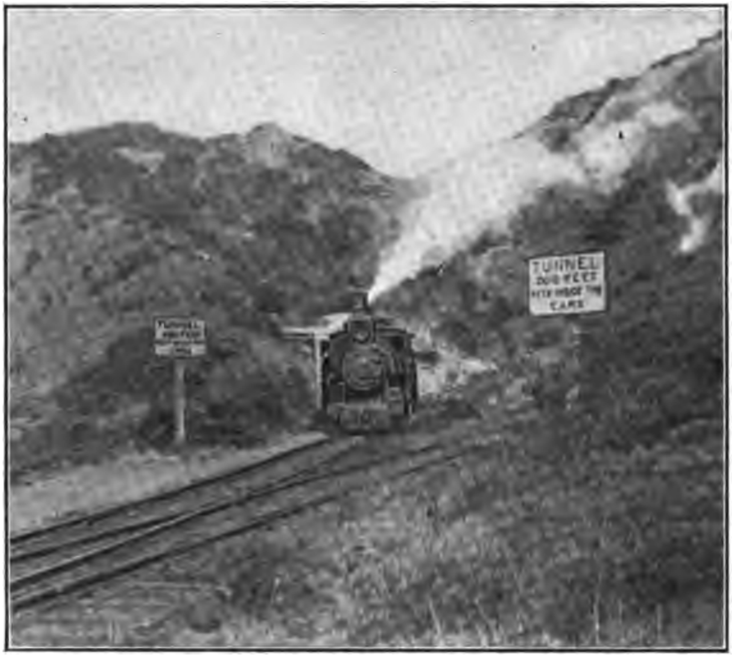
*Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

SHOWING SHARP TURN IN THE ROAD WHERE IT OVERHANGS THE SEA

The route led along very near the eastern shores of San Francisco Bay—opposite the famous Golden Gate. All that stretch of the bay presented a rugged and precipitous bluff, butting rocky cliffs rising sheer for more than 200 feet from the ever restless waters of the sea.

Along this precipitous wall a wide cut

was made for the track. On one side rose the bluff high above the serpentine track; on the other, one could look down 100 feet at the thundering breakers over a dizzy precipice. At one point—near what is known as Land's End—it was necessary to open a tunnel. Though this tunnel was a comparatively short one, yet its construction gave no little difficulty. The stone was naturally so shattered and shivered that the tunnel had to be very strongly timbered throughout its entire length. Once, after completion, a part of the tunnel caved in, crushing the massive timbering like so many straws.



SHOWING EAST END OF OLD TUNNEL WITH TRAIN EMERGING. AN IMMENSE OPEN CUT HAS BEEN SUBSTITUTED FOR THE TUNNEL

For many years past this tunnel has been a source of constant trouble and danger, principally on account of the loose character of the rocks, and, as time passed, to the decayed condition of the timbers supporting the sides and top.

To avoid future trouble in the way of slides at the portals of the tunnel, and the consequent blocking of the line, the engineers decided to convert the old tunnel into an open cut. This course was determined upon after the United Railroad Company decided to abandon the old dummy system and substitute in its stead electricity for steam. Besides, the great and steady increase of travel demonstrated the inadequacy of the old road. A large force of men have been engaged for several months in making this important and expensive change; and yet the work will not be completed for some time.

The converting of the old tunnel into a wide, open cut has proved slow and heavy work. A great deal of blasting was necessary, and many hundreds of pounds of explosives were used. In all, over 50,000 cubic yards of rock were detached and removed from the cut. On the side next to the sea, the top of the cut in places is over 100 feet high.

From end to end the road will be double tracked, and new and heavy 80-pound steel rails laid. The double tracking has rendered necessary the widening of the deep cut and all the roadbed overhanging the ocean. The nature of the shore line is such as to necessitate a very winding road. While it gives the sightseer a magnificent view of the sea, and of the famous Golden Gate, and may make one feel a little nervous, yet this stretch of road is splendidly constructed and perfectly safe.

The terminus at the beach has been greatly improved. The old dummy roundhouse and depot have been discarded, and a large, new and handsome station building constructed—up to date in every respect.

The cost of changing this road to an electric one, and the equipment, etc., will involve an outlay of $250,000 or more. It will be second in speed and appointments to no road in San Francisco. It is written that the dummy, like the old horse car roads of San Francisco, "must go." Only two very small steam connecting extensions now survive in that city.

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*Examination Questions for Firemen, and Their Answers.**

SECOND SERIES.

Question 39.—What is an injector?

Answer.—An injector is a mechanical device for forcing water into a boiler against pressure. It is made up of a series of tubes and nozzles through which the steam passes, the action of the steam raising the water from the supply tank through a height as great as ten or twelve feet and forcing this water into a boiler against pressure. The pressure the injector will work against depends altogether on the size and construction of the tubes and on the initial steam pressure used, it being possible to force against a pressure of 200 or 300 pounds with an initial pressure of only 50 or 60 pounds.

Q. 40.—Is there more than one kind of injector in use?

A.—Yes. There are two general types of injectors; the lifting injector and the nonlifting injector.

Q. 41.—What is the difference between these two?

A.—A nonlifting injector must be placed below the lowest water level in the tank. A lifting injector may be placed a few feet above the water level and is so constructed that it will lift the water from the tank, as well as force it into the boiler.

Q. 24.—What are the principal parts of an injector?

A.—An injector has four outside connections, namely, the steam supply pipe, the water supply pipe, the delivery pipe to the boiler, and the overflow pipe. The principal parts inside the injector are the lifting steam nozzle and the lifting tube, forcing steam nozzle, the combining and condensing tube and the delivery tube: there are also, the steam valve, the overflow valve, the water valve and the line check valve.

Q. 43.—How would you start an injector?

A.—To start a lifting injector with a lever handle, first move the handle to the priming position with the steam valve water valve and overflow valve open. When water appears at the overflow, pull the handle clear out and if the injector is in proper condition, it will go to work. With the screw handle, there is a separate handle for raising the water. This should be placed in the open position until the water appears at the overflow, then the screw handle should be turned clear out and the lifting handle closed again.

With the nonlifting injector, the water valve, which is kept closed while the injector is not working, should be opened and then the steam valve should be opened. When the injector is shut off, the water valve must be closed as well as the steam valve, except in cases where the overflow valve is placed above the level of the water in the tank.

Q. 44.—What are some of the common causes of a lifting injector failing to work?

A.—If a lifting injector does not work properly, the trouble may be under one of three heads. First, the injector may not prime. Second, the injector may prime but will not force the water into the boiler, and third, the injector may prime and may force some of the water into the boiler, but will waste water at the overflow and may break occasionally. Under the first head, when an injector fails to prime, it may be that the tank valve is closed or the tank is dry, or there is a kink in the hose or the strainer is stopped up, or the water valve of the injector is closed. Remedy: Blow steam back to clear the obstruction and examine the tank valve, the water valve and the hose connections. The supply of water to the injector may be all right, but there may be a leakage of air in the suction pipe. The principal on which the water is lifted to the injector is that of atmospheric pressure forcing the water to supply the vacuum in the suction pipe

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*By member.

If instead of the water supplying this vacuum, there is an air leak, the air will supply the vacuum and the water will not be raised. If the air leak is small or is below the water level, the injector may prime. However, if there is a free supply of water to the injector and no air leaks in the suction pipe the injector still may not prime, if the water in the suction pipe is hot. To explain this, it must be understood that ordinarily, water will boil in a teakettle or, in other words, at atmospheric pressure at 212 degrees. If water is put under a pressure, say of 200 pounds, the temperature at which it will boil is raised to 388 degrees. The opposite is the case where the water boils in a partial vacuum, the boiling point is reduced to 160 or 170 degrees with the ordinary vacuum produced in the suction pipe of the injector. If the steam valve or check valve of an injector is leaking and the water in the suction pipe becomes heated to a temperature of 160 or 170 degrees, when the handle of the injector is placed in the priming position and a vacuum is formed in the suction pipe, the hot water at this reduced pressure immediately commences to boil. A teacup full of water will form 1,800 teacups full of steam and the great volume of steam thus formed supplies the vacuum, with the result that the water does not raise. However, if the injector is left in the priming position, until all of this hot water is boiled away, then the injector will prime. Other defects on this first case which are seldom met with, are steam valve disconnected shut, lifting tube in the double tube injectors out of place, overflow valves closed or check valve at boiler leaking so badly that it prevents the proper action of the lifting valve. Under the second case, where the injector primes all right but will not force, the trouble may be due to the fact that while the water supply is sufficient for the priming of the injector, it is not sufficient for the forcing volume, due to the tank valve being partially closed, the strainer being partially stopped up or there being an obstruction in the suction pipe. The trouble may be that the combining and condensing tube, the forcing steam nozzle or the delivery tube are out of line or that there is an obstruction in one of these tubes. It may be that the line check (or boiler check) is stuck shut, or that the tubes of the injector are stopped up or are not of the proper size for the work expected. The third case, where the water is not all taken up by the injector, is usually due to the improper mixture of steam and water. If the water which spills at the overflow is hot, it indicates too much steam or too little water is being supplied to the injector, and the water supply should be increased or steam supply cut down. If the water appears cold at the overflow, the opposite is the case. While many other injector troubles may be mentioned, the above cover the principal points met with in practice.

Q. 45.—What should be done if a boiler check valve sticks open?

A.—If a boiler check valve sticks open, the check valve casing should be tapped with a wooden mallet or soft hammer. If this fails to seat the valve, a couple of buckets of cold water dashed over the casing may seat it. The overflow and water valve of the injector should be closed to prevent the water wasting or blowing back into the tank.

Q. 46.—How can the difference between a leaky check valve and a leaky steam valve be ascertained?

A.—Close the main steam valve, if the leak stops, it indicates the steam valve leaking; if it continues, it indicates the check valve leaking.

Q. 47.—What should be done in either case?

A.—In case the steam valve or check valve is leaking, as soon as the injector is shut off, the water valve should be closed to prevent the heating of the water in the suction pipe. In case the water becomes hot, the overflow valve should be closed and the steam driven back into the tank. The steam valve should then be closed and the overflow valve opened and the handle put in priming position when the cold water going back into the suction pipe will allow the injector to prime.

Q. 48.—If the combining tube is obstructed what may be done?

A.—The injector must be taken apart and the obstruction cleaned out.

Q. 49.—How can a leak in the suction pipe be located?

A.—Close the tank valve and the overflow valve and turn a little steam back into the suction pipe.

Q. 50.—In case a hose or strainer is obstructed, what can be done?

A.—Close the overflow valve and blow the steam back through the strainer. If this does not clear out the dirt, the hose must be taken down and the strainer cleaned by hand.

Q. 51—What can be done in case the feed water in the tank is too hot?

A.—In case the feed water in the tank

becomes so hot that the injectors will not work, even when the main steam valve is throttled down, the only remedy is to run for water, as the injectors can not be made to work with this hot water.

Q. 52.—Will an injector work if all the steam is not condensed by the water?

A.—No.

Q. 53.—With a syphon connection, how is water prevented from flowing out of the tank when the hose are taken down?

A.—The pet cock at the top of the siphon must be opened.

Q. 54.—How can the water in the delivery pipe be protected from freezing?

A.—There should always be a drain at the lowest point in the delivery pipe, usually underneath the check valve, so that there will be no water in the pipe to freeze when the injector is not working.

Q. 55.—How would you prevent a wastepipe from freezing?

A.—On the injector that is being used as a heater, there is no danger of the wastepipe freezing unless there is a leakage at the overflow. In case there is a slight leak which might let this pipe freeze up, the overflow valve should be unseated enough to keep a sufficient current of steam passing through the wastepipe to prevent its freezing. With the injector that is being used to supply the boiler, it may be necessary at times to cut down the water supply so fine that a little stream of hot water will flow from the wastepipe continually, thus keeping it open. However, with an injector that takes up all of its water, a little care in manipulation will do away with the danger of this pipe freezing.

Q. 56.—How can the suction pipe and the injector hose be protected from freezing?

A.—When not using the injector, the overflow valve should be closed and the steam throttled down low at the main valve. The steam valve should then be opened wide and the water valve left open. This will send steam back through the suction pipe and hose and prevent their freezing. Only enough steam should be used to make certain these connections will not freeze up.

Q. 57.—How is the lever monitor injector changed into a heater?

A.—The answer to the question above also answers this question.

Q. 58.—How is the screw monitor injector changed into a heater?

A.—This question is also answered by the answer to Question 56.

Q. 59.—If the water in the gauge glass is not moving up and down when the locomotive is in motion, is its indication safe to go by?

A.—No. If the water glass is working properly the water will be continually moving up and down when the engine is in motion.

Q. 60.—When an engine foams is more water used than when it is working properly?

A.—Yes, because quite a little water is carried over into the cylinders along with the steam.

Q. 61.—Explain the operation of the sight-feed lubricator.

A.—In a sight-feed lubricator part of the steam in the condensing chamber is there condensed, a water valve allows this condensed steam to flow down to the bottom of the oil reservoir, and as oil is lighter than water, what oil is in the oil reservoir will float to the top of this water. The oil pipes at the bottom of the sight-feed arms extend into the top of the oil reservoir, and the oil passes down through them to the regulating valves. From the condensing chamber the equalizing tubes lead into the top of the sight-feed arm so that the pressure on the top of the water in the glass is exactly equal to the pressure acting on the oil at the bottom of the glass, with the exception that the weight of the water in the condensing chamber is just sufficient to cause the difference of the pressure which makes the oil flow, drop by drop, through the regulating valve where it raises through the water in the feed glass and is carried by the current of steam passing through the equalizing tubes through the choke plugs and into the tallow pipe where it runs by gravity down to the steam chest.

Q. 62.—How would you shut off a lubricator before filling it?

A.—First shut off the regulating valves, then the water valve and then the steam valve, then the drain valve may be opened, the filling cock opened, and after the water has drained out, the drain should be closed and the lubricator filled.

Q. 63.—Should a lubricator be filled with cold oil?

A.—Letting alone the fact that cold valve oil will only run very slowly it is bad practice to fill a lubricator with it because when this oil is heated, it expands and there is liability of its bursting the lubricator. Most of the recent makes of lubricators have air chambers provided for this contingency.

Q. 64.—Should the feed valves or the

water valve be closed while waiting on siding, etc.?

A.—The feed valves should always be the ones that are closed.

Q. 65.—How should the valves be opened on a lubricator?

A.—First open the steam valve and allow sufficient time for the condensing chamber to become filled with water, then open the water valve and then the feeds.

Q. 66.—Does a draft from the cab windows affect the working of the lubricator?

A.—It does in some cases where the equalizing tubes are outside of the condensing chamber, in which case the cold air striking these tubes condenses part of the steam passing through them and reduces the pressure on top of the water in the feed glass, causing the lubricator to feed too fast.

Q. 67.—What else might cause the irregularity of feed?

A.—If the choke plugs become stopped up or are worn too much, the feed will be irregular.

Q. 68.—If a lubricator feeds faster when the engine is shut off than it does when working steam, where is the trouble?

A.—The trouble is that the choke plugs are too large or that the steam valve to the lubricator is not wide open so that the full boiler pressure is not maintained on the top of the water in the sight feed glasses.

Q. 69.—If the sight feeds get stopped up how can they be cleaned out?

A.—If the sight feed is stopped up, the other feeds should be closed, the water valve should be closed and the drain opened for a moment. This will allow steam to blow back through this stopped-up feed and will usually clean it out. If not, the lubricator must be taken apart and the feed cleaned out by hand.

Q. 70.—How can stopped up choke plugs be cleaned out?

A.—To clean a choke plug, the regulating valves should be closed, also the steam valve. With these valves closed, if the drain is open for a moment while the throttle is wide open, pressure will be blown back into the lubricator through the chokes. This usually cleans out the obstruction; if not, the parts must be taken out and cleaned by hand.

Q. 71.—What is the use of the equalizing pipes?

A.—The equalizing pipes furnish a passage through which steam pressure is maintained above the water in the feed glasses. The steam passing through these equalizing pipes also passes through the choke plugs and through the tallow pipes into the steam chest, thus assisting the oil in its downward passage from the lubricator to the steam chest. Although when the steam-chest pressure is practically equal to the pressure in the equalizing pipes, the oil must then flow down through the tallow pipes by the aid of the force of gravity alone.

Q. 72.—If an equalizing pipe were broken off or became very loose, what would you do?

A.—This pipe would have to be plugged where it entered the condensing chamber and where it entered the feed arm. This would put that one feed out of service, but would not interfere with the working of the other feeds.

Q. 73.—How can you tell if the equalizing tubes are stopped up?

A.—If an equalizing tube were stopped up, the oil would spurt in a stream through the glass when the regulating valve was opened, as all of the pressure would be removed from the top of the water in the glass.

Q. 74.—Why is it when an engine is working slow with full throttle that the valves become dry, and the lever jumps even though the lubricator is feeding regularly?

A.—When the throttle is wide open and the engine is working slow, the steam-chest pressure is practically equal to the boiler pressure; this being the case, the oil will pass up through the glass all right, but there will be no current of steam passing through the chokes to start the oil down to the steam chest. The oil will, therefore, be held up and the valves become dry.

Q. 75.—What should be done under these circumstances?

A.—The throttle should be closed for a moment, thus giving a chance for the oil to pass down to the valves.

Q. 76.—How many drops will feed through a lubricator from a pint of valve oil?

A.—With ordinary feeding there are about 5,800 to 6,000 drops to the pint.

Q. 77.—Assuming that each valve is given five drops per minute, and the air pump one drop per minute, how long will a pint of valve oil last?

A.—This would be eleven drops per minute, and eleven goes in 5,800 527 times, or eight hours and forty-seven minutes.

Q. 78.—If an engine runs 20 miles per hour, how many miles can be made to a pint of oil with the feed as shown in the last question?

A.—About 175 miles. Multiply the number of hours by twenty.

Q. 79.—How many drops per minute would ordinarily be used?

A.—For average conditions, about six drops per minute should be used for the valves and one drop per minute for the air pump.

Air Brake Questions.

Q. 1.—Why is the present brake called an automatic brake?

A.—Because it is so constructed that a reduction of the pressure in the train pipe causes the brakes to set, and should a hose burst or a train break in two, the train-pipe pressure would be reduced and the brakes set automatically.

Q. 2.—Where is the compressed air stored?

A.—In the main reservoir on the engine and in the auxiliary reservoirs under each car.

Q. 3.—What are the auxiliary reservoir, the train pipe, triple valve, and the brake cylinder used for?

A.—The auxiliary reservoir is simply a storage tank located under each car, which holds air for the use of the brake on that one car. The train pipe is a continuous pipe from the brake valve to the rear end of the train. It supplies the auxiliary reservoirs with air and by increasing and reducing the pressure contained in it, the action of the brakes are automatically controlled. The triple valve has three duties. First, to charge the auxiliary reservoir; second, to set the brake, and, third, to release the brake. The brake cylinders contain the piston to the rod of which the brake levers are connected and air flowing into the brake cylinder forces out this piston and thus brings the brake shoes up against the wheels.

Q. 4.—Where does the pump deliver its air?

A.—To the main reservoir on the engine.

Q. 5.—Where does the main reservoir pressure begin and end?

A.—It begins at the discharge valves of the air pump and ends at the rotary valve of the engineer's brake valve.

Q. 6.—What is excess pressure?

A.—The amount by which the pressure in the main reservoir exceeds that in the train pipe, is known as excess pressure.

Q. 7.—Why is excess pressure necessary?

A.—It is necessary for the quick release of the brakes and the rapid recharging of the auxiliary reservoir.

Q. 8.—How should a brake be cut out?

A.—By closing the cut-out cock in the cross-over pipe from the train pipe to the triple valve under the car, and bleeding the air from out the auxiliary reservoir.

Q. 9.—How should the handle of a cut-out cock stand when closed?

A.—It should stand parallel to the pipe.

Q. 10.—How should the handle of the angle cock stand when closed?

A.—It should stand crossways of the pipe.

Q. 11.—What does the line on the end of the plug cock indicate, regardless of the position of the handle?

A.—It indicates the position of the opening through the cock and is put on because sometimes the handles are put on improperly.

Q. 12.—How should a brake be bled off?

A.—To bleed off a brake, the bleeder on the auxiliary reservoir should be opened and held open until the triple valve is heard to release and the air begins to whistle out (the triple exhaust port), and should then be immediately closed. It is improper to hold the bleeder open after the triple has moved to release position.

Q. 13.—When should the brake valve be used in the emergency position?

A.—In a case where life or property is in danger and at absolutely no other time.

Q. 14.—What does the red hand on the air gauge register?

A.—The main reservoir pressure.

Q. 15.—What does the black hand register?

A.—It registers the pressure in chamber D of the engineer's equalizing discharge brake valve. In full release and running positions, the pressure in chamber D is practically the same as the train-pipe pressure and is a service application after the train-line exhaust has stopped blowing, the pressure in chamber D and the train line are also practically equal, so that the black hand is commonly said to show train-line pressure.

* * *

Wreck on the Big Four Railroad.

The illustrations herewith are of the wreck of the Chicago Express, train No. 11, which occurred May 15, 1905, at Otterbein, Ind., on the Chicago Division of the Cleveland, Cincinnati, Chicago and

St. Louis (Big Four) Railroad. The occasion of the wreck was an open switch, which caused the engine and mail car to turn over, and resulted in the death of Engineer Herbert Haller, of Division 492, B. of L. E., and Fireman U. S. Babb, of Lodge 447, B. of L. F. The same engine is said to have turned over when going down the hill between Altamont and Lafayette last January, killing Engineer L. Burchett, also of Division 492, B. of L. E.

WRECK ON THE BIG FOUR RAILROAD

Showing front view of engine turned over

Testing Steam Boilers.[*]

The accepted method of conducting tests of steam-generating apparatus determines the results of the performance of the combined apparatus and its manipulation. Such experiments are referred to as "boiler" tests, yet they are not properly tests of the boiler, nor do such experiments show the results of the performance of the fire or the furnace feature, except as measured through a more or less inefficient boiler. Basing results on the coal supplied to the grate less that which goes to the ash pit or is removed from the fire in cleaning, is a step toward determining the efficiency of the boiler, but, with present methods, it is assumed that the effect of the fire is constant or uniform, although gas analysis is required which shows that fires differ in quality, but this fact is neglected in considering the efficiency of the boiler, yet, any performance is dependent on the condition of combustion, or, in other words, the temperature of the fire.

The purpose of the boiler is to receive heat from the gases, which is supplied to them by the process of combustion. As heat only flows from a region of higher to one of lower temperature, and as its rate of flow is governed by the difference between the temperatures, it necessarily follows that most heat will flow to the boiler when its temperature is highest. It is useful in this connection to consider that heat and temperature are two entirely different things, temperature being the condition under which the heat is present. If a given quantity of heat is contained in a large amount of gas, it will be at a low temperature, but if in a small amount, it will be present at high temperature. That this is true may be determined according to the formula,

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[*] Abstract from a paper by Mr. A. Bement read before the American Society of Mechanical Engineers, December, 1904. Reproduced from The Railroad Gazette.

$$\text{Temperature} = \frac{\text{Heat developed}}{\text{Weight of gas} \times \text{its specific heat.}}$$

Thus the performance of a boiler is influenced by the temperature at which the heat is supplied, also, when a large quantity of heat is furnished, its absorption is less complete than with a small quantity, the temperature being the same in each case. Therefore, if boilers are to be compared with each other, so their heat efficiency can be determined, it could be accomplished if supplied with the same relative quantity of heat at the same temperature. These conditions would be fulfilled if a uniform number of heat units be supplied for each square foot of heating service per unit of time and at some accepted standard temperature.

Gaging the required quantity of heat to be supplied would present several difficulties. The heating power of the fuel could be determined by sampling an analysis previous to instead of after the test, which would enable the proper amount of heat in the coal to be furnished to the grate, but fuel lost in the ash-pit, removed in cleaning the fire or carried over the bridge wall, and incomplete combustion, would have a varying influence on the quantity of heat generated, and the percentage of such heat, undeveloped, must be known and provided for in the supply of the fuel to the grate. The use of a standard high-grade coal would, of course, very largely reduce these difficulties.

WRECK ON THE BIG FOUR RAILROAD

Showing mail car and left side of train

As different steam-pressures have an influence on the amount of heat flowing to a boiler, it would be necessary to use some standard pressure, which need not be that which would be employed in service. And the loss of heat by radiation would be determined or not, as circumstances require, but with well-set apparatus it could be assumed to be constant at rated capacity.

The supply of a certain predetermined amount of heat would be a very difficult matter, and a less efficient boiler would absorb a smaller quantity of heat than a more efficient one, although the same quantity be supplied per unit of surface and time, and at the same temperature, therefore, the less efficient boiler would do less work. Thus the capacity would not be the same for each, and instead of there being simply a difference in efficiency there would be a difference in both efficiency and capacity. It would probably be better to produce a uniform capacity as measured in equivalent pounds of water evaporated from and at 212 degrees per square foot of heating surface per hour, or, in other words, operate the boiler at its rated horse-power capacity. This would be a simpler method than that of affecting uniform supply of heat, and a standard condition of combustion as shown by the gas analysis would insure that the heat be developed at the required temperature. Owing, however, to slight varying composition of fuels, it would be desirable to use coals in which the ratio between carbon and hydrogen is approximately the same. Thus with standard conditions of developed capacity, initial temperature and steam pressure, the heat developed referred to the heat absorbed, will show the efficiency of the boiler, so that comparisons may be made.

The efficiency of any particular boiler is a fixed quantity, which once ascertained according to some standard applies to any number of reproductions, and thus need only be determined once. It does not follow, however, that the efficiency of different sizes of the same kind of boiler is the same. For example, there is a horizontal water tube type which is usually made from 9 to 14 tubes in height, the travel of the gases being three times across the tubes. The higher boilers are more efficient than the lower ones. For the reason that the gases pass across the tubes at a volume dependent on their temperature, and as the temperature drops, the volume becomes less, which results in a portion of the tube surface of the second and third passes especially not being in the path of the flowing gases, therefore the fixed path of the gases passes across 27 tubes in the boiler which is nine tubes high, and across 42 tubes in the one which is 14 tubes high.

WRECK ON THE BIG FOUR RAILROAD

Showing rear view of engine turned over

Purchasers' requirements will demand in the future as in the past that tests of the combined apparatus with the fuel to be used be made to demonstrate if a certain efficiency and capacity are obtainable. The results of such tests, however, are confusing when an attempt is made to determine the efficiency of boilers or of any portion of the apparatus. It is the author's opinion that there is a greater difference in the efficiency of different boilers than is generally realized. In this connection, experiments on two boilers to determine their relative efficiency may be of value.

WRECK ON THE BIG FOUR RAILROAD

Showing left side of train. The fireman was found near the rear end

These boilers of a horizontal water tube type adjoined each other in one battery. With each the gases were discharged to the same flue and steam at 175 pounds pressure to the same steam header. A chain grate stoker was located under each, and the furnace feature of the apparatus was well developed by fire brick tile suspended from the bottom tubes of the boiler, which extends approximately 12 feet back from the front, corresponding to a brick arch of that length, in addition to the ignition arch of the stoker. These boilers are designated as *A* and *B*, and they and their associated features are exactly the same, except that of the path of travel of the gases among the tubes. With *A* the gases travel with the length of the tubes once and do not act on all of the tube surfaces. With *B* the travel is three times the length of the tubes, in separate passages, which caused the gases to come in contact with very much more of the tube surface than with the boiler *A*. Table No. 1 gives the relative final temperatures of escaping gases at approximately the same capacity and condition of combustion. These experiments were not made at the same

Table No. 1.

	Boilers	
	A	B
Condition of combustion, CO_2..	10.7	10.3
Horse-power developed	564.3	580.4
Heating surface, square feet....	4,800	4,800
Temperature of escaping gases:		
Final	657	469
Above air supply	582	394
Above steam temperature.....	278	93
Greater than B..	186	...
Temperature of steam..........	379	377

time, but the same kind of coal was used. The reason that the gas analysis was only carried to CO_2 is that, owing to the very efficient tile roof furnace, combustion was always complete. The horsepower developed placed each boiler nearly on the same basis, being about 3 per cent. to the disadvantage of *B*, therefore the work done by each was approximately the same. The condition of combustion was also slightly in favor of boiler *A*, but this may be considered as approximately the same for each. Thus all conditions were practically the same except that of temperature of escaping gases, which showed a considerable difference in the boilers as gas coolers.

If the specific heat of gases at high temperature were known, the gas analysis and an ultimate analysis of the fuel would afford data for calculating the quantity of heat in a pound of gas at initial temperature, and the heat remaining at final temperature could be calculated from direct temperature measurement, and the efficiency could be expressed according to the equation,

$$E = \frac{H_1 - H_2}{H_1},$$

and it would not be necessary to determine the quantity of fuel used in such an experiment as given in Table No. 1.

If the reduction in temperature of escaping gases from a boiler at 186 degrees may be taken as representing the work of an average economizer, then it appears boiler *B* possesses an efficiency equal to that of the combined efficiency of boiler *A* and an economizer; or, in other words, that *B* is as efficient without an economizer as the combined efficiency of boiler *A* with one, which serves to illustrate the great difference which may exist in different boilers.

These boilers were also tested by the alternate method of the standard code, which was feasible, because conditions could be exactly the same, and the object was to compare one with the other, and not with boilers in general. The tests were run at the same time, one being started fifteen minutes before the other. Alternate wheelbarrows of coal from the same source were laid down before each boiler only as required. The thickness of the fire was the same. Each damper was full open and the speed of the stoker regulated so that the fuel bed extended to the end of the grate. The result is shown in Table No. 2.

Table No. 2.

	Boilers A	Boilers B
Pounds pure coal burned per hour	1,765.75	1,446.56
Pounds water evaporated per hour	13,210.34	13,629.24
Pounds of water evaporated per lb. of pure coal burned	7.47	9.42
Heating power, pure coal, B. T. U., lb	13,633	13,633
Temperature:		
Feed water	212	212
Gases, final	594	442
Gases above air supply	514	362
Gases above steam temperature	217	65
Gases greater than B	152	..
Saturated steam	377	377
Draft over fire, inches of water	0.38	0.22
Horse-power	383	395
Efficiency, per cent. of heat absorbed by boiler	52.93	66.73
Fuel saving of boiler B over A, per cent	....	20.68

Pure coal is an expression which the author prefers to use instead of that of combustible, because the fuel free from ash and moisture contains oxygen and nitrogen, which are not combustibles. The capacities were lower than those in Table No. 1, because the coal used was a less favorable size. This latter test shows the effect of the difference in efficiency of the two boilers in ordinary service.

The author prefers to recognize a steam generating apparatus as being composed of separate features as follows: As boiler and grate, with this combination, the gases flow in contact with the heating surface immediately as they leave the fire. Also, as boiler, grate and furnace, the latter feature consisting of a refractory roof over the fire which extends back a considerable distance, its presence making it possible for the gases to be mixed together a sufficient extent while at high temperature, so that no combustible escapes oxidation. Such feature here designated as a furnace, if of a length of about 14 feet, will produce an ideal mixture of the gases if the coal is supplied to the grate at a uniform rate, but, if not, its ability to effect mixture of gases is not sufficient for complete combustion. With the thick fire of a chain grate stoker feeding bituminous coals, a considerable amount of combustible gas escapes from the front of the fire, such a quantity, in fact, that an ignition arch alone, although 5 feet in length, does not cause sufficient mixture of the gas and air to produce complete combustion, therefore, if the maximum requirement of the furnace is to thoroughly mix together the gases from a chain grate fire, then the efficiency of such furnace feature as fitted under boilers *A* and *B* is ideal, because proper regulation of the quantities of air and fuel supplied by the grate resulted in the production of 18 per cent. CO_2 with complete combustion and no smoke.

The performance of the chain grate stokers under boilers *A* and *B* are unsatisfactory in two respects: First, that with desirable strength of draft the available thickness of fuel beds does not supply sufficient combustible to satisfy the air supply. Second, fuel is wasted by passing over the end of the grate with the ash. This latter fault may be remedied by running the grate at a speed which will allow the fuel to burn away before it reaches the end, but this results in increased excess of air, therefore the chain grate stoker, in combination with the above described furnace feature, is inefficient to the extent by which it fails to supply a sufficient thickness of fire or quantity of combustible, and the loss of fuel with the ash is not a fault of the stoker, because if the supply of combustible was sufficient to satisfy the air the grate could be run at a speed which would insure that the fuel all be burned.

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American Society for Testing Materials.

The eighth annual meeting of the American Society for Testing Materials was held at Atlantic City, N. J., June 29-July 1, 1905, with headquarters at Hotel Chalfonte. The following was the program of the sessions:

First Session.

Thursday, June 29, 3 p. m.

BUSINESS MEETING.

1. Minutes of the Seventh Annual Meeting.
2. Annual Report of the Executive Committee.
3. Proposed Amendment of the By-Laws.
4. Report of Committee K:
   On Standard Methods of Testing. Gaetano Lanza, Chairman.
5. Report of Committee O:
   On Uniform Speed in Commercial Testing. Paul Kreuzpointner, Chairman.
6. Report of Committee P:
   On Fire-proofing Materials. Ira H. Woolson, Chairman.
7. Report of Committee Q:
   On Standard Specifications for the Grading of Structural Timber. Herman von Schrenck, Chairman.
8. Election of Officers.
   The ballot accompanying this circular may be signed and mailed to the Secretary, or it may be voted at the meeting. The ballot will close at 4 p. m.
9. Miscellaneous Business.

Second Session.

Thursday, June 29, 8 p. m.

JOINT MEETING WITH THE SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION.

10. Annual Address by the President: The Testing Engineer.
11. A Course of Laboratory Instruction in Testing Materials. W. K. Hatt.
12. A Course in Properties of Materials. G. L. Chritensen.
13. Plan and Scope of the Proposed Investigation of Structural Materials Under the Auspices of the U. S. Geological Survey. J. A. Holmes and Richard L. Humphrey.
14. Miscellaneous Business.

Third Session.

Friday, June 30, 10 a. m.

Separate meetings will be held at this session by the Sections on Cement and Preservative Coatings.

ON CEMENT.

15. Report of Committee C:
    On Standard Specifications for Cement. George F. Swain, Chairman.
16. Report of Committee I:
    On Reinforced Concrete. F. E. Turneaure, Chairman.
17. The Collective Portland Cement Exhibit and the Results of the Tests Made at the World's Fair, St. Louis, Mo. Richard L. Humphrey.
18. Normal Consistency Tests of Neat Cement. Topical Discussion to be introduced by R. S. Greenman.
19. Economical Mold for Forming Compressive Test Pieces for Concrete. Clifford Richardson and C. N. Forrest.
20. Slow-pulling, Early-stage Rotary Portland Cement vs. the Ordinary Early-strength-developing Product. W. A. Aiken.

21. British Standard Specifications for Cement, with Introduction by R. W. Lesley.
22. Impact Tests of Asphalt Paving Mixtures. Clifford Richardson and C. N. Forrest.
23. Miscellaneous Business.

ON PRESERVATIVE COATINGS.

24. Report of Committee E: On Preservative Coatings for Iron and Steel. S. S. Voorhees, Chairman.
25. Report of Committee N: On Standard Tests for Lubricants. W. M. Davis, Chairman.
26. Standard Specifications for Preservative Coatings for Steel. Topical Discussion to be introduced by C. B. Dudley, Robert Job, A. H. Sabin, Maximilian Toch and Cyril de Wyrall.
27. Proper Methods in Conducting Painting Tests. G. W. Thompson.
28. Protection of Iron and Steel Structures by Means of Paper and Paint. Louis H. Barker.
29. What is the Best Method of Painting Steel Cars? Topical Discussion to be introduced by F. P. Cheesman, G. W. Thompson and S. M. Evans.
30. Miscellaneous Business.

Fourth Session.

Friday, June 30, 3 p. m.

ON IRON AND STEEL.

31. Report of Committee A: On Standard Specifications for Iron and Steel. W. R. Webster, Chairman.
    This report will embody the proposed revised Standard Specifications on
    a. Structural Steel for Bridges.
    b. Steel Rails.
    c. Steel Castings.
    d. Steel Axles.
    e. Steel Forgings.
32. Some Causes of Failure of Rails in Service. Robert Job.
33. Report of Committee M: On Standard Specifications for Staybolts. H. V. Wille, Chairman.
34. Influence of Methods of Piling Staybolt Iron on Vibratory Tests. H. V. Wille.
35. A Preliminary Report on Tests of Nickel Steel and Carbon Steel Under Combined Stresses. E. L. Hancock.
36. Miscellaneous Business.
    The evening of Friday, June 30, will be left open. Arrangements will probably be made for an informal smoker.

Fifth Session.

Saturday, July 1, 10 a. m.

ON CAST IRON.

37. Report of Committee B: On Standard Specifications for Cast Iron and Finished Castings. Walter Wood, Chairman.
    This report will embody the proposed Standard Specifications for (1) Car Wheels and (2) Gray-Iron Castings.
38. A Comparison of Standard Methods of Testing Cast Iron. Richard Moldenke.
39. Hard Cast Iron: The Theory of One of Its Causes. Henry Souther.
40. The Thermite Process in American Practice. E. Stuetz.
41. Miscellaneous Business.

Sixth Session.

Saturday, July 1, 3 p. m.

MISCELLANEOUS SUBJECTS.

42. Report of Committee G: On the Magnetic Testing of Iron and Steel. J. Walter Esterline, Chairman.
43. Report of Committee H: On Standard Tests of Road Materials. L. W. Page, Chairman.
44. Report of Committee R: On Boilers. E. D. Meier.
45. A Large Hydraulic Testing Machine for Uniform Loads. Robert A. Cummings.
46. Specifications for Cotton Tapes for Electrical Purposes. R. D. De Wolf.
47. Rail Sections as Engineering Structures. P. H. Dudley.
48. Miscellaneous Business.

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Electric Tablet System on New Zealand Railways.

In Daily Consular Reports of April 21, 1905, United States Consul-General F. Dillingham, Auckland, New Zealand, contributes the following very interesting and exhaustive description of the electric tablet system in use on the railways of that colony:

On August 1, 1904, I sent to the department of state a summary of the "electric tablet system" in use on the railways in this colony to prevent collisions, which was published in Daily Consular Reports for October 1, 1904, No. 2070. Since then this consulate-general has received many letters from railway men throughout the United States asking for a detailed supplemental report on this subject, which, through the courtesy of the general manager, I now present.

Whenever the term "officer in charge" is used it is understood to mean the station master, signalman, or other employe who is in charge of the tablet apparatus for the time being, and he only is authorized to receive and deliver the tablets and to remove them from or place them in the apparatus.

PURPOSE OF THE SYSTEM.

The purpose of the electric train tablet system is to prevent more than one train being between any two tablet stations at the same time, and when no train is in the section between the tablet stations to permit a train to be started from either end. This is accomplished by every train carrying a tablet, one tablet only being obtainable from the tablet instruments of the same section at the same time.

The apparatus is so constructed as to render the issue of the train tablet absolutely safe at either end of a section and under the control of the station which the train is approaching. No train tablet can be issued from station Y without the consent and co-operation of station Z, and when once a station has issued a train tablet no other tablet can be obtained for the same section until the one issued has been delivered at its destination and placed in the instrument there or reinserted in the instrument from which it was withdrawn.

The meeting place of trains can be altered immediately with perfect safety.

The signaling of trains on the electric train tablet system does not in any way dispense with the use of fixed, hand, or fog signals whenever and wherever such signals may be requisite to protect obstructions on the line.

THE APPARATUS.

The apparatus (see diagram) consists essentially of a slide, *R;* a bell plunger, *B;* a switch plunger, *C;* a slide, *S;* a visual signal *V*, showing three positions —"Line closed," "Up train approaching," or "Down train approaching," and "Up train on line" or "Down train on line;" a slot *T*, and an indicator, *I*.

The slide *R* is for the purpose if inserting tablets into the apparatus, and can be withdrawn at will.

The bell plunger serves to transmit all signals on the bells, according to the code.

The switch plunger *C* is for the purpose of switching the current into electro-magnets to unlock slide *S*.

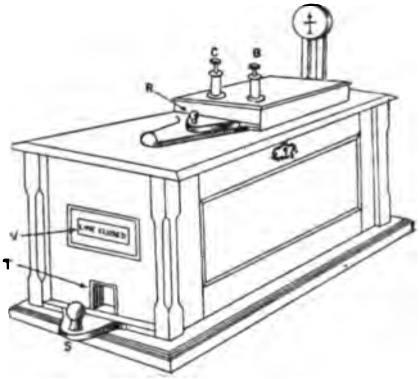

Diagram of Electric Tablet Apparatus, New Zealand Railways

The slide *S* is kept locked, and can not be withdrawn without the consent and co-operation of the man at the distant station after signals have been exchanged in accordance with the code.

The slot *T* is to show the tablets in the cylinder of the apparatus.

The indicator *I* indicates all signals sent on the bell plunger from either end.

GENERAL REGULATIONS—CUSTODY AND TRANSFERENCE OF TABLET.

Except as provided in Regulation 23, the officer in charge of the tablet working for the time being is the sole person authorized to take a tablet from or place it in the instrument, and to receive the tablet from and deliver it to the engineer, provided, however, that the officer in charge of the tablet working may, in exceptional cases, specially appoint a member of the station staff, duly qualified to act, and delegate to such member the duty of delivering the tablet to and receiving it from the engineer. The member so appointed will be held responsible for the safe custody of the tablet given him, and for the prompt and proper discharge of the duty assigned to him. The engineer, while the tablet is in his charge, must carry it in the socket or other place provided for the purpose. Under no circumstances, except as provided in Regulations 10, 27 and 27a, must a tablet be transferred from one train to another without being passed through the instrument and dealt with in accordance with these regulations. The number of the tablet carried by each train must be entered in the train register book.

ENGINEER NOT TO START WITHOUT TABLET AND PROPER SIGNALS BEING EXHIBITED.

Except as provided in Regulations 27a, 28 and 31, an engineer will render himself liable to dismissal if he leaves a tablet station without the tablet for that section of the line over which he is about to run, or unless it has been shown to him as required by the following paragraph, and by Regulation 18:

When a train has more than one engine in front, or when two or more light engines are coupled together, the tablet must be shown to each engineer, and be delivered to and carried by the engineer of the last engine.

After receiving the tablet the engineer must not proceed until all the necessary fixed or other signals have been exhibited. He must keep the tablet under his own charge (except as explained in Regulations 27, 27a and 34) until he reaches the end of the section, when he must give it up to the signalman or other duly authorized person. The tablet is an indication that the line is clear only to the home signal at the station or junction in advance, and engineers must regulate the speed of their trains accordingly.

Engineers must be extremely careful not to take the tablet beyond the station at which it ought to be left.

Engineers must reduce the speed of their trains when passing a tablet station at which they are not scheduled to stop, so as to admit of their safely delivering and receiving the train tablet.

The person in charge of the tablet working will render himself liable to severe punishment should he contribute to any irregularity in the tablet working.

Each tablet has engraved or marked on it the name of the tablet station at each end of the section to which it applies, and the tablets of adjoining sections are different in shape.

NORMAL POSITION OF FIXED SIGNALS.

(a) "Danger" signals must always be kept exhibited at all the fixed signals at tablet stations except when it is necessary to lower or turn them off for a train to pass, and before any signal is lowered or turned off care must be taken to ascertain that the line on which the train is about to run is clear and that these and other regulations have been duly complied with.

(b) At places which are not tablet stations the "All right" signal must, unless special instructions to the contrary are issued, be kept exhibited at all the fixed signals (where such signals are provided), except when required to be placed at "Danger" for the protection of trains having to stop in the section or of any other obstruction that may exist on the main line which the signals are intended to protect.

WORKING FIXED SIGNALS.

(a) When trains which have to pass each other are approaching a tablet station in opposite directions the signals in both directions must be kept at "Danger," and when the train which has to be first admitted into the station has been brought to a stand, or nearly to a stand, the home signal applicable to such train may be lowered to allow it to draw forward to the station or to the starting signal, and after it has again come to a stand and the signalman has seen that the line on which the other train will arrive is quite clear the necessary signals for that train may also be lowered.

(b) Where starting signals or advanced starting signals are provided, except in the cases referred to in Regulations 27, 27a, 28 and 31, the starting signal or the advanced starting signal must not be lowered until a tablet has been obtained for the train to proceed to the tablet station in advance.

No private signals of any kind may be sent by the bell. All signals must be sent slowly and distinctly, the bell plunger or key being allowed to work the full length of its stroke between each beat, and under no circumstances may the officer in charge work with two stations at the same time. The time at which all signals are sent or received shall be immediately entered in the train-register book in ink, "speak on telephone" signals excepted. If the officer in charge receives a signal which he does not understand, he must immediately stop any train from entering the section and reply by giving the "Repeat" signal. No signal is complete until it is correctly acknowledged, and all signals must be slowly repeated until properly acknowledged.

MISCELLANEOUS.

When the tablet instruments are not in use the words "Line closed" are shown on the screens and the needle indicators are in the vertical position.

BELL SIGNALS.

The instruments must not under any circumstance be subject to violent usage, and all movements should be steady and distinct one from the other.

As it is essential that the tablets be free from dirt and grit, the officer in charge must, when necessary, wipe the tablets on both sides before placing them in the slide.

BELL SIGNALS.

Code of bell signals for tablet working, with references to regulations for their use.

Regulation.	Meaning of signal.	Signal, how given (beats of bell).
[a]1	Speak on telephone	1.
3, 4	Is line clear for:	
	Ordinary passenger train	4, consecutively.
	Fast train[b]	2, pause, 2.
	Mixed train	5, consecutively.
	Empty carriage train	2, pause, 2, pause, 1.
	Goods train or engine and break	6, consecutively.
	Ballast train	3, pause, 3.
	Light engine	2, pause, 2, pause, 2.
	Train or engine entering section to return to starting point	3, pause, 2, pause, 1.
5	Departure signal for any class of train	2, consecutively.
6	Arrival signal for any class of train	3, consecutively.
7	Canceling "departure" or "line clear" signal	3, pause, 4.
8	Obstruction—danger	7, consecutively.
8	Obstruction removed	2, pause, 3, pause, 2.
9	Release tablet for shunting	5, pause, 2.
9	Shunting completed; tablet replaced	2, pause, 5.
10	Train passed without tail signal to box in advance	2, pause, 4, pause, 2.
10	Train passed without tail signal to box in rear	3, pause, 2, pause, 3.
11	Stop and examine train	8, consecutively.
12	Train divided	2, pause, 6.
13	Train or vehicle running away	3, pause, 3, pause, 3.
14	Shunt train for following train to pass	2, pause, 5, pause, 2.
15, 16, 17	Engine assisting	9, consecutively.
18	Return bank engine	5, pause, 5.
18	Bank engine has returned	10, consecutively.
19	Repeat signal	2, pause, 6, pause, 2.
20	Signal given in error (cancel signal last given)	3, pause, 4, pause, 3.
21	Testing signal	2, pause, 7, pause, 2.
22	Opening of "switch out" station	6, pause, 6.
22	Closing of "switch out" station	4, pause, 4, pause, 4.
23	Transference of tablets by lineman	12, consecutively.

[a] This signal is only for use where the telephone is operated upon the same wire as the tablet instruments, and must not be used in case independent telephone connections are supplied.

[b] Mail and express trains, or any that may be shown as "fast" in ordinary or special time tables, and casualty vans or relief engines are to be so signaled

SPECIAL REGULATIONS REGARDING USE OF SIGNALS AND APPARATUS.

1. *Tablet and Telephone Switch.*

At stations where the telephone is operated upon the same wire as the tablet instruments, by means of a switch, when it is necessary to speak on the telephone, give one beat on the tablet bell plunger, and when the signal is acknowledged turn switch to "up" or "down" telephone, as the case may be, and speak. The officer in charge receiving the telephone signal must, after acknowledging, also turn his switch to "up" or "down" telephone, as the case may be, and listen. When speaking is finished the switches must at once be turned to their normal position again.

2. *Repetition and Acknowledgment of Signals.*

Except when special instructions are issued to the contrary, all signals must be acknowledged by repeating them, and no signal must be considered as understood until it has been correctly repeated to the tablet station from which it was received.

When the "Is line clear?" signal is not acknowledged, it must be given again at short intervals.

3. *Mode of Signaling.*

Let A and B represent the stations at each end of a tablet section. A has a train ready to enter the section and proceed toward B. A gives B the signal "Is line clear?" as per code. B replies by repeating the signal. A holds down on his bell plunger marked *B*. B depresses his switch plunger with his left hand, and at the same time withdraws his slide *S* with his right hand. The withdrawal of this slide (which can only be half way) will reverse the commutator in the instrument, and will bring the signal "Up train approaching" or "Down train approaching" in view.

B will then depress his bell plunger, holding down on same for a few seconds. A, upon receipt of this signal, will hold down on his switch plunger with his left hand, and withdraw his slide *S* to its full extent with his right hand, which will bring the signal "Up train on line," or "Down train on line," in view. A will remove the tablet from the recess in slide and hand it to the engineer. A will give the "Departure" signal to B.

As soon as the train arrives at B, B withdraws slide *R*, inserts the tablet and pushes slide home. The passing of the tablet into the cylinder unlocks his instrument, and B then pushes in slide *S*, which restores his visual signal to "Line closed." He will then give A the "Arrival" signal, holding down on the last beat. A, upon receipt of "Arrival" signal, will depress his switch plunger, and push home his slide *S*, which will at the same time restore his visual signal to "Line closed."

For a tablet taken out for shunting or for the purpose of entering some intermediate siding and being returned to the station from whence it was issued, the manipulation of the machine is practically the same; the man who issues the tablet merely returns it into his machine by means of the slide *R*, which will restore the apparatus after the passing of the usual signals.

During the transit of the train between A and B, no second tablet can be withdrawn, the apparatus at both stations being locked. The signalmen at each end of the section have at all times an absolute record of what has been done on both instruments, which record can not be disturbed until the tablet has been restored to the apparatus at either one end or the other.

The normal position of both instruments at A and B will be "Line closed."

4. *Line Clear (Giving Permission for a Train to Approach).*

(*a*) Unless special instructions are issued to the contrary, the line must be considered clear, and "Line clear" given for trains to approach from either or both directions in accordance with Regulation 3, when the line is clear up to the home signal posts.

(*b*) When the approaching train for which "Line clear" is asked is a nonstopping train, or the station for which "Line clear" is asked is on a grade or near the foot of a grade, "Line clear" must not be given unless the running line between the home signal posts is clear, and after "Line clear" has been given the running line between the home signal posts must not be obstructed except to allow a train arriving from the opposite direction to enter the station.

If the line be not clear, or if from any other cause the officer in charge be not in a position to give permission for a train to approach when the officer in charge in the rear forwards the "Is line clear?" signal, that signal must not be acknowledged, but the "Obstruction—danger" signal must be sent. When the officer in charge to whom the "Is line clear?" signal has been sent is prepared to receive the train he must give the "Obstruction removed" signal, which must be acknowledged, and any train requiring to proceed in either direction must then be signaled in accordance with these regulations.

5. *Departure Signal.*

"Departure" signal to be given on the departure of a train into the outward section. (For exceptions see clause *a* of the banking engine instructions, Regulation 18.)

6. *Arrival Signal.*

"Arrival" signal to be given when a train or engine arrives at a station and the officer in charge has seen that the train is complete and under the protection of the home signal.

7. *Canceling Signal.*

Should it be necessary to cancel the "Is line clear?" or "Departure" signals, the officer in charge must restore the tablet to the instrument and send the "Canceling" signal to the tablet station in advance, which signal must be acknowledged. An entry must be made in the train-register book recording the fact that the signal has been canceled. The "Canceling" signal must not be used unless the "Is line clear?" or "Departure" signals have been acknowledged or accepted, and must be used only when a train has been signaled to the tablet station in advance and it is found that such train will not proceed in the usual course.

8. *Obstruction—Danger.*

(*a*) Should it be necessary, in consequence of obstruction or other causes, for an approaching train to be stopped at the tablet station in the rear, the "Obstruction—danger" signal must be forwarded to that station, and the officer in charge, after receiving such signal, must immediately exhibit the "Danger" signal and take the necessary measures to stop the approaching train. He must not allow the train to proceed until he has received from the tablet station in advance the "Obstruction removed" signal, nor until the proper signals have been sent and acknowledged.

(*b*) If necessary, the "Obstruction—danger" signal must be sent in both directions.

(*c*) The officer in charge forwarding the "Obstruction—danger" signal must also have the signals placed or maintained at "Danger," to protect the obstruction.

(*d*) Should the officer in charge, receiving the "Obstruction—danger" signal, succeed in stopping a train for which the "Is line clear?" signal has been accepted by the officer in charge at the tablet station in advance, he must at once restore the tablet to the instrument and advise the officer in charge at that station by giving the "Canceling" signal.

(*e*) Should he not succeed in stopping the train he must advise the station in advance to that effect.

(*f*) The "Obstruction—danger" signal is not to be used for ordinary shunting or crossing operations after a tablet has been issued when such operations are carried on inside the home signal of the station for approach to which the tablet has been issued.

9. *Release Tablet for Shunting.*

(*a*) To obtain a tablet for shunting the officer in charge must send the "Release tablet for shunting" signal to the next tablet station, and the officer in charge there must, provided he is in a position to accept such signal, acknowledge it and give permission for a tablet to be withdrawn.

(*b*) When the shunting is completed and the single line is again clear the tablet must be replaced in the instrument and the "Shunting completed—tablet replaced" signal sent to the next tablet station.

(*c*) If an officer in charge is not in a position to release a tablet for shunting purposes, owing to his requiring to pass a train into the section, he must reply to the "Release tablet for shunting" signal by the "Obstruction—danger" signal, and as soon as that signal has been acknowledged send the "Is line clear?" signal.

10. *Train Passed Without Tail Lamp.*

(*a*) All trains and light engines will carry a tail lamp in the rear, both by day and by night, to indicate to the officer in charge that no vehicle has become detached on the journey, and officers in charge must carefully watch each train as it passes and satisfy themselves that it is complete before giving the "Train arrival" signal to the tablet station in the rear.

(*b*) If a train should pass with tail lamp missing or out the officer in charge must send the "Train passed without tail lamp" signal to the tablet station on each side of him, but must not deposit the tablet in the instrument. The officer in charge at the tablet station in advance must stop the approaching train and ascertain from the guard whether his train is complete. If the train is complete the officer in charge must give the "Arrival" signal, and the officer in charge at the tablet station from which the "Train passed without tail lamp" signal was sent must then deposit the tablet in the instrument and give the "Train arrival" signal to the station in the rear.

Should the officer in charge become aware as the train passes into the section in advance, or on receipt of information from the tablet station in advance that a portion of the train has been left behind, steps must be taken to clear the obstruction before any other train is allowed to enter the section, the first available engine at either end of the tablet section being detached from its train for the purpose of clearing the line.

(*c*) If the engine which is to remove the obstruction starts from that end of the section where the tablet is out of the instrument, the officer in charge must hand such tablet to the engineer and instruct him to proceed cautiously to the vehicle or vehicles which have become detached, and remove them to the most convenient end of the section.

(*d*) If, however, the relieving engine is to start from the other end of the section, then the tablet must (after all arrangements are made) be placed in the instrument so that one may be withdrawn at the other end of the section to enable the relieving engine to proceed to the vehicle or vehicles which have become detached, and remove them to the most convenient end of the section.

(*e*) In either case the officers in charge at each end of the section must communicate with each other and arrive at a clear understanding how the obstruction is to be removed.

(*f*) The engine sent into the section to clear the obstruction must be dealt with as laid down in Regulation 27.

(*g*) If a train should pass with a tail light out when it should be burning, and the officer in charge can plainly see the lamp, and is satisfied that the train is complete, he must give the "Train arrival" signal to the tablet station in the rear and the "Train passed without tail lamp" signal (2, pause, 4, pause, 2, beats) to the tablet station in advance, and when practicable also telegraph or telephone to the tablet station in advance, stating that the lamp is not missing, but out. In such cases it will not be necessary for the officer in charge sending the signal to stop any train going in the opposite direction, but the officer in charge in advance must stop the approaching train and inform the guard of the circumstances.

11. *Stop and Examine Train.*

(*a*) If an officer in charge observes anything unusual in a train during its passage, such as signals of alarm by a passenger, goods falling off, a vehicle on fire, a hot axle box, or other mishap, except a tail lamp missing or out or a train divided (for arrangements as to which see Regulations 10 and 12), he must give to the officer in charge of the tablet station in advance the "Stop and examine train" signal, and the officer in charge of the tablet station in advance must acknowledge that signal and immediately exhibit the "Danger" signals to stop the train coming from the tablet station from which the signal was received. The train when stopped must be carefully examined an dealt with as occasion may require.

(*b*) Should the officer in charge who receives the "Stop and examine train" signal be unable to ascertain after examination of the train why the signal was sent, he must, if the next train is traveling in the opposite direction, inform the engineer of the circumstances, and instruct him to proceed cautiously to the next tablet station. He must also communicate with the officer in charge who forwarded the signal, in order that the latter may, if necessary, caution the engineer of the next following train.

(*c*) When practicable the officer in charge must also telegraph or telephone to the tablet station in advance the cause of sending the "Stop and examine train" signal. Officers in charge must be careful to notice each train as it passes, to ascertain whether there is any apparent necessity for having it stopped at the next tablet station for examination.

(*d*) Should either officer in charge have reason to believe, in the case of a vehicle being off the rails or goods falling from the train, that the permanent way has been damaged or fouled, he must not allow any train to proceed in the direction of the obstruction until the line has been examined and he is satisfied that it is safe for the passage of the train.

12. *Train Divided.*

(*a*) This signal must be sent to the tablet station in advance in the event that an officer in charge observes that a train has become divided and is running in two or more parts.

If the train is assisted by a bank engine in the rear, or is running on a falling gradient or on short sections, where the stoppage of the first part would risk a collision with the second part, the officer in charge receiving such signal, if the line upon which the divided train is running be clear ahead for it to run upon and permission has not been given for a train to approach from the opposite direction, must not exhibit the signal to stop the first portion, but must give the engineer a green flag and a white flag held together and waved apart at frequent intervals by day, or a lamp showing in quick alternations green and white lights at night; and the engineer on seeing the signal will understand that his train is divided, and must exercise great caution by looking out for the second portion, and unless he has reason to believe the line is not clear ahead must not stop the portion attached to his engine until he is satisfied that the rear portion has been stopped or is running very slowly. He must, however, observe and obey any signals that may be exhibited against him. If the line be not clear into the next section ahead, the officer in charge must keep the signals at "Danger" against the approaching train.

As soon as the first portion of the train has passed, the officers in charge sending and receiving the "Train divided" signal, must take proper measures for dealing with the second portion, and place detonators on the rails to attract the attention of the guard, or of the bank engineer, should there be a bank engine in the rear.

(*b*) If the divided train is running on a rising gradient, or where the line is level, and is not assisted by a bank engine in the rear, the officer in charge receiving the signal must exhibit the "Danger" signal to stop the train. The first portion of the divided train, when stopped, must be shunted into a siding as expeditiously as circumstances will permit or otherwise dealt with as may be necessary to prevent the second portion coming into collision with it.

(*c*) No train must be allowed to enter the section until it has been ascertained that the line on which it is about to run is not obstructed.

(*d*) Should a train become divided in starting, and the engineer run forward with the first portion, leaving the rear portion stationary, the "Stop and examine train" signal must be sent to the tablet station in advance, and not the "Train divided" signal.

13. *Vehicles Running Away.*

(*a*) If any vehicle, train, or portion of a train is running away, the officer in charge at the tablet station toward which the train or portion of the train is running must be advised of the fact by the officer in charge at the tablet station in the rear, who shall give the "Vehicle running away" signal. The officer in charge receiving this signal must stop any train about to proceed on the same line, and take any other measures that may be necessary, such as turning the runaway train on to another line or into a siding, or repeating this signal to the next tablet station, as may be most expedient under the circumstances.

(*b*) The first train traveling in either direction must not be allowed to proceed until it has been ascertained that the line on which it is about to run is not obstructed.

(*c*) The officer in charge at the tablet station from which the runaway vehicle or train has started, or any other officer in charge whose station may be passed by the runaway vehicle or train, must immediately give the "Obstruction—danger" signal to the officer in charge at the tablet station toward which the runaway vehicle or train is traveling, before giving the "Vehicle running away" signal, as prompt action on the part of both officers in charge may prevent a mishap. Should the officer in charge receiving the "Obstruction—danger" signal succeed in stopping the train or engine for which he has given the "Is line clear?" signal, he must restore the tablet to the instrument and then advise the officer in charge in advance by giving the "canceling" signal.

14. *Shunt Train for Following Train to Pass.*

This signal must be used to prevent important trains being delayed by less important trains. When, before the "Train arrival" signal has been received from the tablet station in advance for the last train, the officer in charge receives a signal from the tablet station in the rear for a more important train, the "Shunt" signal must be sent to the tablet station in advance, and the officer in charge there, on receiving this signal, must take the necessary measures to clear the line, so as to prevent delay to the second train. The officers in charge forwarding and receiving the "Shunt" signal must make a note of it in the train-register books.

15. *"Engine Assisting" Signal.*

The "Engine assisting" signal is to be given when a train is assisted by an engine intended to run through the section. The train must be signaled in the usual manner by the "Departure" code, denoting the description of train; and immediately after the train has entered the section the "Engine assisting" signal must be given, which must be acknowledged. The "Arrival" signal must not be given until the whole of the train, including the assistant engine, has arrived and is under the protection of the home signal.

The officer in charge in advance must be informed on the speaking instruments of the position of the engines assisting. Officers in charge are specially instructed to enter in their train-register books the "Engine assisting" signal, in order that no mistake may arise by trusting to their memory.

16. *Engine Assisting.*

(*a*) When a train is assisted by a second engine in front, the engineer of the engine next the train must carry the tablet.

(*b*) When a train is assisted by an engine in the rear, the engineer of the rear engine must carry the tablet; but the engineer of the train engine will be held personally responsible for seeing, before starting, that the engineer of the rear engine is in possession of the tablet for the section over which he is about to travel, and the rear engine must in all cases run the entire length of the tablet section, except in cases where the banking engine key is in operation, as provided for in clause *a*, Regulation 18.

(*c*) When a train is assisted by an engine in the rear, and the train engine becomes disabled so that the train can not be taken forward, the engineer of the assisting engine must retain the tablet until he has removed the whole of the train, including the disabled engine, to the tablet station in the rear. In the event of the assisting engine in the rear of any train failing, the engineer of the train engine must send his fireman to the engineer of the assisting engine and obtain from him an order in writing, which must be indorsed by the guard of the train, stating that the engineer of the assisting engine is in possession of the train tablet, and authorizing the engineer of the train engine to return from the tablet station in advance for the remainder of the train. The train engine must then proceed to the tablet station in advance with that part of the load which the engine can take. The engineer, after informing the officer in charge what he is about to do and showing him the written order, must return and remove the rear portion of his train and the disabled engine.

(*d*) The necessary steps must be taken to protect the assisting engine and the rear portion of the train, as provided in Rule 98.

17. *Two or More Light Engines Coupled.*

When two or more light engines coupled together have to pass over a tablet section, the rear engine must carry the tablet; but the engineers of the leading engines will be held personally responsible for seeing, before starting, that the engineer of the rear engine is in possession of the tablet for the section over which they are about to travel, and they must not be uncoupled except at a tablet station under the protection of the home signal.

18. *Working of Return Bank Engines.*

(*a*) To facilitate the working of trains requiring assistance in the rear over steep gradients on those portions of the line where the electric train tablet is in operation, and where it is not necessary for the banking engine to run the entire length of the tablet section, the engineer of the train engine will carry the tablet, and the engineer of the bank engine in the rear of the train will carry a "bank engine key" (described below), to enable him to return to the station from which it was received.

(*b*) At stations where an electric switch lock is provided it is attached to the electric train tablet instrument, and is controlled by a special key called a bank engine key, which, when turned and withdrawn from the switch lock, disconnects the electric circuit of the tablet instruments so that no tablet can be obtained nor communication made on the instruments at either end of the section until the bank engine key has been returned and the electric switch locked. This bank engine key, which must only be carried by an engine assisting a train in the rear, is provided with a large ring, on which is engraved "Bank engine key," the name of the station from which the bank engine starts, and the number of miles the bank engine is authorized to run before returning.

(*c*) If a train is assisted in the rear by a bank engine, and such engine requires to run the entire length of the section, Regulations 15 and 16 must be strictly carried out.

(*d*) If a train is assisted in the rear by a bank engine, and the latter is not required to travel the entire length of the section, the train which is assisted must be signaled in the usual manner and the tablet obtained from the instrument. When this has been done and the train is ready to start, the "Departure" signal must be given and acknowledged. Immediately after the "Departure" signal has been given and acknowleged, the "Return bank engine" signal (5, pause, 5) must be given, to indicate that the train is assisted by a bank engine in the rear, and that such engine will not run the entire length of the section, which signal must be acknowledged by repeating it. The officer in charge will, after the "Return bank engine" signal has been acknowledged remove the bank engine key from the electric switch lock and take the key, together with the tablet, to the engineer of the train engine, to whom he must deliver the tablet and from whom he must obtain an acknowledgment on the prescribed form, and at the same time show him the bank engine key and verbally inform him that such key will be handed to the engineer of the bank engine.

The bank engine key, together with the acknowledgment of the engineer of the train engine that he is in possession of the tablet, must then be handed to the engineer of the bank engine.

The engineer of the bank engine must intimate to the engineer of the train engine that the bank engine key and the acknowledgment are in his possession by giving three whistles—one long, one short, one long—and until such intimation is received the engineer of the train engine must not proceed on his journey.

(*e*) On the arrival of the bank engine at the point to which it is authorized to run the engineer must return at once to the station from which he received the bank engine key and hand it to the officer in charge, who must place it at once in the electric switch lock and give the "Bank engine has returned" signal (10 beats, consecutively), which signal must be acknowledged by repeating it.

(*f*) The bank engine key must never be used or taken out of the electric switch lock for any other purpose than for a bank engine assisting a train in the rear for a specified distance and in accordance with these instructions.

(*g*) Should the bank engine fail the engineer must hand the bank engine key to the fireman, who will take it to the station from which it was issued and inform the officer in charge of the failure and the circumstances, and the officer in charge will then arrange for a relief engine to proceed to the disabled engine to bring it in. The engineer of the relief engine must, before approaching, be in the possession of the bank engine key, which key must be handed to him personally by the fireman of the disabled engine and shown to the signalman before leaving. The fireman must also accompany him to the place where the disabled engine was left. If, however, it is considered that assistance can be more readily obtained at the station to which the train assisted by the bank engine was traveling, the engineer must give the fireman the bank engine key and written instructions to the officer in charge, authorizing a relief engine to come to his assistance. The officer in charge, after being informed of the circumstances, reading the written instructions of the engineer, and seeing that the key is in possession of the fireman, must arrange for a relief engine to be sent to the disabled engine to take it to the other end of the section.

The engineer of the relief engine must, before proceeding to the assistance of the disabled engine, be in possession of the written instructions from the engineer of the disabled engine, which must be handed to him personally by the fireman of the disabled engine, who must at the same time show the engineer of the relief engine the bank engine key, and accompany him to the place where the disabled engine was left. Before the relief engine leaves the written instructions, the bank engine key must be shown to the signalman. On arrival at the disabled engine the bank engine key must be handed over to the engineer of the relief engine.

(*h*) The disabled bank engine must always be taken to the station from which it started, and the engineer of the relief engine must not deliver the bank engine key to the officer in charge until the line is clear. The fireman must not on any account allow the key out of his possession until he hands it over to the engineer of the relief engine, and the engineer of the relief engine must not allow it to pass out of his possession until the disabled engine has been removed from the section. The engineer of the disabled engine must protect his engine in accordance with Rule 98 in the Book of Rules and Regulations, and must not on any account move his engine after having parted with the bank engine key.

(*i*) If a return bank engine should fail when assisting a train, and the train engine is unable to take the whole of the train forward, the engineer of the train engine must send his fireman back to the engineer of the bank engine and obtain his assurance in writing, indorsed by the guard of the train, that the rear portion of the train will not be moved until the train engine returns for it. The bank engine must then be removed in accordance with instructions in clauses *g* and *h*.

(*j*) If the fitter is not on hand to restore communication, pilot guard working is to be instituted when the bank engine key is lost or damaged, and bank engine working is to remain suspended until communication is restored.

If the key is lost, the bank engine having returned, and the bank engine key form being in the possession of the officer in charge, the switch lock may be cut out by the fitter in the presence of the officer in charge, and both—viz., officer in charge and fitter—must sign an indorsement on the last form used, setting forth the circumstances. This bank engine key form is to be held by the officer in charge until the key is found or substitute is provided. A substitute can only be provided when a complete understanding has been come to between the traffic superintendent or district traffic manager and the electrical engineer.

If the key is damaged so that it will not open the lock, the fitter may cut out the lock if the key and form are in possession of the officer in charge, and so restore communication. If, however, the key has to be taken away by the fitter for repairs, this can only be done after the fitter has given the officer in charge a receipt for it.

In all cases of loss or damage to the key, or if it fails to work and the pilot guard working has been arranged, communication must never be restored either by cutting out or by means of the key until pilot guard working has been canceled and the pilot guard is present. If a lost key is found it must be locked away by the officer in charge until pilot guard is present and pilot working canceled.

RETURN BANK ENGINE KEY FORM (MISCELLANEOUS 30.)

No. .... Station,
.........., 19..

To the Engineer of the Bank Engine assisting ...... Train:

I have received the electric tablet for ...... train to proceed from .... to .... and have seen the "bank engine key" for the bank engine to assist this train to mileage ....

............, *Engineer.*

(On the return of the bank engine, this form must be delivered with the bank engine key to the officer in charge at the station from which it was received.)

19. *Repeat Signal.*

The "Repeat" signal is to be given when a signal is not understood, and it is necessary to have the signal repeated.

20. *Error Signal.*

The "Error" signal is to be given when an erroneous signal has been sent or it becomes necessary to cancel the signal previously given. This will cancel the last signal sent.

21. *Testing Signal.*

The "Testing" signal is to be used by the electrical engineer's staff when testing the instruments. It is to be acknowledged by repetition, and must only be given when the section is clear.

22. *Opening and Closing of "Switch Out" Stations.*

At stations where "switch out" instruments are in use the following instructions must be strictly carried out in switching out and switching in:

Let A, B and C represent three tablet stations, and B the station to be switched out during the specified hours.

Switching out.—When the time arrives for B to switch out, the officer in charge at that station must give the "Closing" signal to A and C, respectively. If these stations are prepared to allow B to switch out, they must acknowledge by repeating the "Closing" signal; but if they are not prepared they must acknowledge by one beat. Until A and C have given permission to B to switch out by repeating the "Closing" signal, B must not in any way interfere with the closing portion of the apparatus, but, after permission has been given, B will switch his apparatus out in accordance with the instructions attached to the apparatus, and will then inform A and C by telephone that he has switched out. A and C will then switch out their "intermediate" or B apparatus in accordance with the instructions attached to the apparatus, and then inform B by telephone that they have switched out.

When the above operations are complete, B will be switched out, and through A and C tablet apparatus ready for use; but before any tablet is issued the "Testing" signal must be given by A and acknowledged by C, in order that it may be seen that all connections are complete. If the "through" section (A-C) is complete, A will inform B by telephone of the fact. B must not leave the station until he has been advised that the "through" apparatus is in working order.

Switching in.—Before B attempts to switch in, he must ascertain by telephone whether there are any trains in the section or tablets out of their apparatus; if there are, he must wait until the section is clear. On being informed that the section is clear and that no tablets are out of their apparatus, he must advise A and C that he is ready to switch in. A and C, upon the receipt of this information, will proceed to switch in their "intermediate" apparatus in accordance with the instructions attached thereto, and then inform B that they have switched in. B will then switch in his apparatus in accordance with instructions attached thereto, afterwards giving to A and C the "Opening" signal, which must be acknowledged by both stations, and which will indicate that B is properly switched in.

Officers in charge are enjoined to be very careful in seeing that all slides are properly "home" before commencing to switch in or out; also to use the telephone as directed, so that they may be satisfied that one part of the operation is completed before commencing another part.

Engineers must be especially careful in observing for which section the tablet is available, so as not to overcarry it or leave it at B when it should be taken to A or C.

(To be continued.)

* * *

Hydrocarbon Oils and Their Value as Lubricants, With a Few Practical Tests.[*]

What we have to deal with is not the friction of opinions, but those of metals. When you take two metals and rub them together, you will find more or less wear which comes from the irregularities and asperities that are on the surface. Now, what engineers would have to deal with is the wear and tear or the friction which helps to tear these irregularities off. You know that the finest machinery that we can manufacture today, our locomotives, street cars, and everything would finally stop, if it were not for our lubricating oils, to make a film that saves the metals.

To prevent this friction is the desideratum of the engineer, thereby saving wear and tear and loss of power. Theoretically, if friction is the result of two surfaces rubbing together, to reduce this we must take steps to keep the two surfaces apart. If we can introduce between the moving surfaces, say, some substance, like oil, with adhesive properties (that is, by adhesion we mean that which clings or adheres to the metal), we should then have two films created between the surfaces which adhere to the two metals, and when the metals rub over each other, instead of abrading, the friction takes place on the two films.

It will be evident to you at once that the thickness of these films have a great deal to do with the saving of abrasion. We must not only have adhesive properties, but cohesive as well, and by cohesion we mean the power of the particles to hold themselves together and resist disruption.

The name we give to these combined properties of an oil is viscosity. Now, if it were not for viscosity, a very thin film would allow these metals to come together.

The surfaces of journals and bearings, rings and cylinder walls are not, of course, perfectly smooth, and that is why we must fill up these little spaces if we would have perfect lubrication. Under heavy loads and slow speeds there is a tendency to force the particles of the lubricant asunder, thereby permitting the films to become too thin, and consequently cause the metal surfaces to rub, abrade and wear.

Take water, kerosene, alcohol, these are strongly adhesive; mercury is strongly cohesive, but mercury would never do for a lubricant, because it has no adhesive properties; therefore, in dealing with oils, we must select not only those oils with adhesive properties, but those with cohesive properties. Suppose we take a liquid that is a semisolid. Now, it is undoubtedly true that the lubricant will keep the materials apart, but what will happen? We have such a thing as fluid friction, that is, the friction of the moving molecules, and if we use a lubricant which is too strongly cohesive, the result will be, we increase the friction of the oil; and the rule in mechanics is to use an oil that is as fluid as will sustain the load.

The fluidity of oil has a great deal to do with the carrying away of heat, and that is a very important thing, and the higher viscosity of an oil, the slower it is carried away.

In the engine room we have to deal with very many different conditions, and that is why there is really no set rule by which you can prescribe an oil. We have to deal with heavy loads, slow speeds, light loads and fast running machinery, bath lubrication, pad lubrication, all ordinary applications of lubricant, hot engine rooms, cold engine rooms, all of which have to be classified under the head of lubrication under ordinary atmospheric conditions. It is on account of these varied conditions that the selection of an oil is largely a matter of judgment.

In the purchasing of oils it is usually done under some brand, but the engineer is really ignorant of what the specifications are of the oils which he purchases. We have seen before that the properties of an oil—viscosity, for example—is valuable, and that different viscosities should be used under different conditions, but do our engineers know what the specifications are of these oils that he uses? Certainly he has no standard to go by, and I, for one, believe that all oils should be sold under specifications, and the engineer should be given these specifications as an index and a guide for future purchasing. All of the refiners that sell oils today sell under specifications and never under brands. I refer only to refiners, not jobbers. Personally, I would not think of buying oils under brands, for I could not select the proper oil for the varied purposes required.

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[*] By Frank Harris Floyd in The International Steam Engineer.

In entering the manufacturing establishment, as I said in the early part of the evening, the conditions under which lubricants are used is so varied that it becomes an intelligent proposition for a salesman to pick out the proper oils for the work, and certain it is that results should be registered in some way, and what better than by the engineer calling for the specification of the oils that are recommended?

There is no question but what the properties of an oil are an index to their value, and we can easily get them with laboratory appliances.

Besides atmospheric conditions we also have to deal with cylinder lubrication. Take the gas engine for example—and there are very many now used throughout the country—conditions are entirely different. We have temperatures ranging as high as two thousand degrees at the explosive point. True, every attempt is made to cool the cylinder wall by water circulation and air; still, withal, an oil is more or less exposed to the high temperature. It must become obvious to you that the viscosity of an oil at the boiling point, the flash and fire test, the cold test, and the gravity are all important factors in gas engine lubrication. There is really no oil that will stand the high temperatures, and there is more or less carbonizing. We, therefore, have to consider the quality of the crude oil for non-carbonizing properties.

Twenty years ago the engineer had to deal almost exclusively with animal and vegetable oils—fixed oils they are called. They consisted of sperm, olive, rape, castor, tallow, palm, lard and neatsfoot oils. They were the principal oils used for lubrication. Their properties are a rather high cold test. Their viscosity is really more permanent and stable than our hydrocarbon oils. They are composed of oxygen, hydrogen and carbon. The fact that they contain oxygen makes them susceptible to atmospheric influences. When these animal and vegetable oils come in contact with the air they oxidize. Fatty acids are formed which we call free fatty acids, and they will attack metals and will also gum machinery. In cylinder lubrication under extreme heat and moisture this process takes place very rapidly. Twenty years ago we did not carry to exceed fifty or sixty pounds pressure of steam, but even at that the moisture and heat would attack these animal oils, set free the glycerine, and leave the fatty acids behind, which would ball up in the cylinder and attack the cylinder walls and corrode the same. You can, therefore, see that animal oils are not ideal oils for practical purposes. Animal oils are liable to create considerable internal heat under the action of the air, and have caused a great many fires by combustion.

Now, take our hydrocarbon oils. The first that were known of hydrocarbon oils was in Scotland. They found that the shale of Scotland contained more or less oil, and by carrying on destructive distillation, condensing the distillates, oil was produced which, when properly refined, made a suitable lubricant. In this country we soon followed suit, and the first refiners had to deal with shale. Soon, however, the crude petroleum in its natural state was discovered—found floating on the rivers—and was used by the Indians for medicinal purposes, called Seneca oil. The first oils refined were improperly done, and their odor was so offensive that when they were sent to New York City they were called a public nuisance.

Let us enter into the matter of refining oils as we find the process carried on today. The first oils refined were from Pennsylvania, and are considered to be of the best possible grade. They averaged about 43 Baumé gravity, and are comparatively free from sulphur and asphaltum.

I would dwell for a minute on the different qualities of crude oil. Oils from Ohio contain more or less sulphur and asphaltum. Indiana oils do not stand as high as Ohio; Texas oils are comparatively free from sulphur, but have an asphaltum base; they have a magnificent cold test and are particularly desirable for refrigerating work. It is well that the purchaser of an oil familiarizes himself with the stock from which the oil is refined. An expert can tell what crude oil was used and from what State. Crude petroleum has a color or cast that we call the fluorescence, or the bloom. Sometimes oils are debloomed, however, but as a rule you can tell by the color or cast of the oil. Pennsylvania oils—as a rule cylinder goods—have a greenish cast; Texas oils, a dark purple bloom.

It is quite important that the properties of the crude oil are known, because their freedom from sulphur and asphaltum, where heat is applied to the oils, is particularly desirable.

Let us follow through the methods of refining a cylinder oil.

Take the Pennsylvania oil, for example. We have what we call stills—two different kinds. Heat is applied by fire under these stills, whereby we elevate the temperature of the crude oil. Before the oils are introduced to the stills they are settled, strained. In the bottom of these stills are steam pipes. If the refiner is up-to-date he will use superheated steam to facilitate the elevation of the distillates to the condenser. In cylinder oil distillation the work is done rapidly to prevent (in the nomenclature of the refiner) "cracking." Where distillation is carried on slowly the vapors rise lazily and are liable to be condensed before they reach the condenser by the upper part of the still. They fall back again and really destructive distillation takes place, which works an injury to the lubricating oil.

You no doubt remember one of our New York concerns using the vacuum system of refining oils. This was done to keep the temperature of the oil down as low as possible, and to assist the vapors in passing over to the condenser.

The object of the refiner is to carry off from the crude oil all of the light distillates and leave the residuum in the still free from volatile properties. The flash and fire test of the residuum is gained right in the still.

In refining the crude petroleum I will give you the different products that result. First, we have cymogene, which has a specific gravity of 108 Baumé and is a gas under atmospheric pressure; then we have rhigolene, which is also a gas at 94 Baumé gravity; the next that comes off is gasoline, which ranges from 84 to 68 gravity; then we have the naphthas, which are used by paint makers; after this comes the kerosene from 46 to 48 Baumé, and following this comes the miners' oils with high fire test for safety. The idea of the refiner is to eliminate from the cylinder oils all of the lighter distillates, which are condensed and are passed to what we call the tail house. Some of the heavier distillates are what we call paraffine stock, and this is sent over to the refrigerating house. This stock with the paraffine in it is cooled very slowly, forms large crystals, and the stock is then put into presses and the oil is squeezed out, leaving behind the paraffine scale, which is afterwards refined. This paraffine oil comes under the head of neutral oil and runs at about 30 Baumé gravity. It is used for lubricating light running machinery. This is sometimes re-run and the residuum is again treated, when this oil will show a higher viscosity and a lower gravity.

The cylinder oil, or the residuum left in the still, is immediately drawn off and sent to the treating house. There is more or less nitrogenous matter in the original crude oil, which must be eliminated. This is done by using a solution of sulphuric acid first, after which a solution of caustic soda is used, and both acids and alkali are washed out, leaving the oils free from nitrogenous matter. The oils are then filtered, sometimes several times, and they are then known as cylinder stocks.

The value of animal oils lies largely in their oily properties and their power to mix with moisture. They are more oily than the hydrocarbon oils. We find the best results are gained in cylinder lubrication by compounding a certain percentage of the animal oils with the hydrocarbon oils of different fire tests.

In filtering oils we lighten in color the oils, which sometimes bring fancy prices. Once filtered, cylinder oil is usually as powerful a lubricant as one desires. For automobile work, however, I must say that I think the repeated filtering removes some of the carbonizing properties of an oil without materially injuring the lubricating value.

Paraffine oils are somewhat different from the neutral oils. We take stocks not altogether suitable for cylinder goods, and they are run to coke in what we call the tar stills. The paraffine distillates are sent over to the crystallizing house and the treatment is somewhat the same as with neutral oils.

We get our heavy engine oils from the paraffine oils, oils of high viscosity.

We have an apparatus for testing the flash and fire test of an oil. Also the standard Tagaliabue Viscosimeter, which is used by all the independent refiners throughout the country. Also the hydrometer for getting the gravity of an oil.

The flash point is the lowest temperature at which the vapors ignite and the flame goes out. The fire test is the lowest temperature at which the flame becomes permanent. Taking the viscosity of an oil, the universal practice is to use the capillarv tube. The more viscous the oil, the slower it will pass through the tube. Cylinder oils are taken at 212 degrees; engine oils at 70 degrees.

We also have other tests that we apply—the acid test and a saponification test. An animal oil under the action of caustic soda will saponify and a mineral oil will not, and we can very simply get the proportion of animal oils blended with hydrocarbon oils.

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*Locomotives of Great Power.**

Mechanical Automatic Stoking.

Since the introduction of locomotives of great power, the chief consideration in connection with the selection of men for firemen has been to procure the persons of sturdier physique, sufficiently muscled to withstand the manual labor, and who possess, in addition to their physical qualifications, the intelligence that will insure advancement to positions as locomotive engineers.

With the usual type of locomotive furnace, grate arrangement and draft appliances, the steaming capacity of the boiler is largely dependent upon the quality of the fuel and the method of firing. More especially will this be noted where the distances are long, schedules fast, weather and dispatching conditions unfavorable, and little, or no, opportunity is given to clean the dirty fires which may accumulate on large grate areas. Under such circumstances, the better the quality of the coal used, the more satisfactory will be the results.

Good firing requires that the proper amount of fuel be supplied to the firebox to meet the demands of the locomotive, and in the case of coal, or solid fuel, it must be placed on the grate at the proper point and time.

With locomotives of great power, the average fireman is more a means for transferring the coal from the tender to the firebox, than an expert to insure good combustion and economy. Therefore, on long runs, it may be said that mechanical automatic stoking is not only desirable, but necessary for economy.

In the use of liquid fuel, the apparatus for feeding the oil to the furnace may be considered as meeting the requirements of an automatic stoker but with solid and bituminous fuel, the problem is not so simple. Those mechanical automatic stokers now on the market have been designed to feed coal into the firebox in a similar manner to hand firing, and do not accomplish the results desired either as to the labor required to handle the coal, better combustion, or the prevention of large quantities of smoke. From a combustion standpoint, an underfeed type of stoker should give the most desirable performance, and as its mechanical relation with the tender would be such that the labor for handling the coal from the supply to the stoker could be reduced to the minimum, it would appear to be the proper one to develop for locomotive purposes. By underfeeding the fuel, the fresh coal is continually introduced below the fire line, and in rising is brought to the coking stage, at which time the gases are liberated, pass upward through the fire, and are consumed to the last degree, producing as nearly as practicable complete combustion. Such a method, besides providing for a more uniform fire and consequent unvarying steam pressure, dispenses with the smoke nuisance, and there should be no waste of unconsumed fuel by loss through grates, or being carried through the tubes and ejected into the atmosphere.

The application and practical development of a suitable design of mechanical automatic underfeed stoker in connection with the wide firebox, as now generally applied to locomotives, will be looked forward to with much interest.

Mechanical Forced and Pre-heated Draft.

While the advantages of mechanically forced and pre-heated, as compared with induced draft, will readily assert themselves as a means to provide for greater efficiency, through the more constant and automatic control of the draft, improved combustion of fuel of inferior and indifferent qualities, possibility to increase the evaporative power of the boiler to meet sudden demands without urging, or loss of economy through reducing the evaporative effort of the fuel and adaptibility to varying climatic and weather conditions, its use in connection with locomotive service involves complications which may not be justified by the improved performance.

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*Abstract of a report by J. E. Muhlfeld, General Superintendent Motive Power, Baltimore and Ohio Railroad, for discussion at the Seventh Session of the International Railway Congress, held in Washington, D. C., May, 1905, and published in the Bulletin of the Congress, March, 1905.—Continued from July, 1905, Magazine.

Pure Heated Feed Water and Method for Feeding Boilers.

A locomotive steam boiler well designed and constructed of the best material, when of the capacity to perform the work required of it and properly cared for, should last in good condition from twenty to thirty years, and in general practice the condition of the water used is of very marked importance, for upon the impurities held in suspension, or solution, depends not only the economy of operation and maintenance, but the life of the boiler itself.

Almost all natural water contains more or less mineral matter held in solution, as well as the organic and mineral matter held in suspension. While the latter may be removed by filtration, the former can be removed only by the agency of heat or chemicals.

A good locomotive boiler water is one that is free from all impurities, except a small proportion of soluble noncorrosive salts, giving a total of from three to six grains of solid matter per United States gallon.

The waters most injurious to locomotive boilers are, in the order named: Those containing acid, corrosive solids and salts, alkali, free carbonic gas with free oxygen, high scale-forming ingredients and water contaminated by sewerage and organic matter, although this relation may change as the amount of the different impurities vary.

Some of the more common impurities of waters are sediment, mud, clay, readily soluble salts, such as carbonates of lime, magnesia and iron, and sulphates of lime and magnesia, all of which produce incrustation; chloride of magnesium, acid and mine water, dissolved carbonic acid, oxygen and organic matter, all of which cause corrosion, and carbonate of soda in large amounts and organic matter from sewerage or particles in suspension, which cause priming.

Considering the substances which cause incrustation, the most reliable remedy is the precipitation of the salts by chemical action before the water is supplied to the tenders. For the balance of the incrusting and priming substances, the best remedy is frequent blowing out, a thorough washing out with hot water under heavy pressure at periodical intervals, and the addition of a small amount of vegetable oil to reduce the surface tension and prevent foaming of the liquid.

Test and practice has proved that fine insoluble powders, when fed into boiling water, will cause foaming. While it has been customary to attribute this to alkaline water, we may conclude that it is the loosened scale matter and the floating particles in boilers that are monthly responsible for foaming, and when a sudden reduction of pressure outside of the boiler may carry off the steam in any quantity, the water saturated with air or gas will boil with great disturbance, while the animal matter or sewerage contaminated water put into the boiler will also produce priming.

Under the ordinary conditions of service, priming is produced by suspended matter in the boiler, and without regard to the amount of alkaline salts.

The loss of water and heat through priming creates much danger in the boiler from the uncertainty of the height of the water and detracts from the power and efficiency of the locomotive.

The treatment of unsuitable feed water for locomotive use has long been recognized as a necessity, and crude methods with such practical means and facilities as have been available, have been practiced for many years. With the increased capacity of locomotives, the amount of water evaporated and the supply of water required has resulted in the necessity for improved apparatus and storage capacity to provide for such chemical treatment, which, combined with mechanical means, will produce the best results.

The recent annual droughts in some of the mountainous coal mining districts of the United States, where the river waters have become badly contaminated and polluted by the refuse from mines, mills and decaying animal and vegetable matter, has resulted not only in scarcity of supply, but in a water that is entirely unfit for locomotive purposes, the consequence of which has been an unlimited expense and delay in the handling of power and traffic.

For locomotive boiler use, water purification by means of the continuous system is the more satisfactory and economical method, as compared with the intermittent process on account of less labor, space, machinery and pumping required, where the analysis of well and river waters vary slightly, and are fairly constant.

The chemicals used are usually soda ash and lime, which are the most economical in first cost, and give equally good results as those, the cost for which makes their use prohibitive.

The tendency of feed water to cause foaming, after treatment with alkaline reagents, and the difficulty of maintaining a solution containing no floating particles, has caused some trouble. The chief cause for foaming of treated water is the increasing of the surface tension of the liquid by the solution of soda salts, and, as all water under pressure is in a turbulent state, when a release of pressure comes, any substance in solution which increases the surface tension will cause foaming, which will be further increased by the addition of fine solid particles in the water.

As feed water furnished to steam boilers must be heated from a normal temperature to that of the steam before evaporation can commence, this is generally at the expense of the fuel, which should better be utilized in making steam. All of this heat, therefore, which can be imparted to the feed water is just so much saved, not only in the cost of the fuel, but in the capacity of the boiler, and it is essential that this be done by heat, which would otherwise be wasted, as the heat imparted to the feed water by injectors and live steam heaters comes direct from the fuel and represents no saving.

There are only two sources of waste available for this purpose, which are the exhaust steam and the exhaust gases. By the exhaust steam, feed water may be maintained heated at from 200 to 210 degrees, and with well arranged and proportioned heaters the heating of the boiler feed water will also result in the precipitation into the water tanks, instead of into the water, of a large proportion of the carbonates. This precipitation into the water tank can be readily cleared out, and from a location where it does no harm, even should it be neglected. As feed water supplied from sources where they come in contact with vegetation are highly charged with carbonic acid, this, in the presence of oxygen, will be the cause of active corrosion of the boiler plates and tubes. The heating of the feed water will tend to deprive the water of the air, as well as the carbon dioxide, thus precipitating the carbonates, and by introducing the water into the boiler at a temperature near boiling point, or vaporization, the corrosive action will be reduced to a minimum, although where the sulphates are high it is necessary to resort to chemical means. These results from the heating of the boiler feed water are of considerable importance, as they may be the means of reducing the liability for failure, and the cost for maintenance. In addition, the treatment of water chemically before it enters the boiler, as may be accomplished by some of the best designed water purification plants now in the market, will greatly relieve the present locomotive maintenance and operating conditions existing in many of the bad water territories.

Utilizing the heat in the steam and water that must be removed from locomotive boilers when they require repairs or washing out, for the purpose of again filling or heating water for boiler use or testing, is an operation that results in the minimum temperature change of the boilers, or scale formation on sheets, economy in water supply and more rapid method for washing out to prevent excessive terminal delay.

Where the condition of the water is such that it is not necessary to wash out at frequent intervals, the process of blowing off and rinsing, or changing the water in the boilers by the hot water system, to prevent foaming and priming, gives good results, in that it is unnecessary to remove steam pressure or fire, and by this system the water in the modern locomotive boilers can be changed within half an hour with reduction in initial steam pressure of not more than 50 per cent.

Such methods in connection with the use of pure heated feed water show decided advantages in increased life of tubes and fire-boxes, reduction of boiler repair, washing out and fire building, labor and material expense and in the mechanical delay at terminals.

The relative value of injectors, direct acting steam pumps and pumps driven from the cross head, is a question of importance in connection with the use of heated feed water. When feeding cold water direct to the boiler, the injector has a slight economy, but when feeding heated water or through a heater, the pump is the most economical. Vertical types of duplex high duty hot water pumps are now being constructed, self-contained and to run without lubrication, and these require but little attention or expense for their operation.

Where weather conditions are severe, water conditions bad and the cost for fuel high, serious consideration should be given to the heating of the feed water and delivering it to the boilers by means of suitable pumps, instead of injectors. However, where weather and water conditions are favorable, and the cost for fuel low, the benefit to be derived would hardly warrant the expense for the installation and maintenance of the increased number of parts required for the heating of the feed water and to deliver it to the boiler.

Superheating.

In America superheated steam has been applied mainly to stationary engine practice until the past few years, when its use in connection with foreign locomotives has resulted in tests of similar appliances on locomotives in Canada and the United States.

The properties of superheated steam are such as will make its use of material advantage in connection with locomotive operation, and its introduction has not been as rapid as the results to be derived justify, especially when compared with the more expensive application that has been made of the compound system of steam distribution, and which has not given the same results as can be accomplished by superheating.

Owing to the desired development of a large amount of power in locomotives of limited dimensions, and which must necessarily be produced at a considerable loss in economy, the advantages to be obtained by the use of superheated steam should be an item of considerable consequence.

With the great waste of heat between the burning of the fuel and the exhaust of the steam from the cylinders, at the present time, only about 10 per cent. of the potential energy in the fuel is converted into work, while with a high degree of superheat in the steam the efficiency and economy can be very materially increased by the smaller volume of steam required.

Superheated differs from saturated steam of the same pressure, inasmuch as it has a higher temperature, greater specific volume, less density and will increase the volume at the same pressure proportionately to the increase in temperature. As it can not exist in contact with the water from which it is generated, the saving in water must be effected at the expense of heat. The higher the superheating, the greater the gain, and in practice the advantage of the increased volume is enhanced by overcoming the losses through condensation in the cylinders, for the reason that superheated steam will contain excess heat in sufficient quantity to heat the walls of the cylinders and the metal surfaces so exposed and at the same time retain enough heat to prevent condensation and loss of work in expansion. Owing to its dryness, lightness and elasticity, locomotives will have greater endurance when operated at maximum capacity and will be especially effective under acceleration and high piston speeds.

The use of superheated steam should be desirable in connection with the operation of heavy freight trains over mountain grades, where it is necessary that the boiler stresses and the use of fuel and water should be reduced to the minimum, and in services where frequent stops and starts are made it also has an advantage, through small loss by condensation, when the steam comes in contact with cold cylinders.

The dryness of the steam is a positive advantage through the absence of expense for maintenance due to the working of water through valve chests and cylinders.

The economy shown by superheating is so well defined that there is now no question of its effective and substantial saving. Superheated steam locomotives, whether compound or simple, show about the same percentage of economy over an ordinary simple locomotive. A number of tests have been made with simple types of locomotives using superheated steam, in comparison with similar types of compounds, but as yet no definite conclusions, more particularly with respect to the successive superheating before the steam enters the cylinders of compound locomotives, have been arrived at. It is estimated that the use of superheated steam in connection with compound engines will give about the same results by reduced loss in cylinder condensation as the triple expansion of steam without the superheating.

The fact that the compound can be replaced by the simple locomotive, with increase of power and low pressure in the boiler, is an advantage, even if no economy in fuel is obtained. As superheated steam applied to locomotives gives a higher thermo-dynamic efficiency than that realized from compound locomotives using saturated steam, it will enable the possibility of obtaining the advantages of compounding, without the introduction of the objectionable features. The possibility for increasing the capacity and economy of present locomotives by superheating is of even greater importance, as boilers which may be deficient in design or capacity can be much improved in effectiveness, and superheaters can be applied without altering the general design or construction of the boiler or mechanism.

In order to profit by the increased power resulting from superheating, the size of the cylinder should be increased to an extent proportional to the amount by which the consumption of heat by the ordinary locomotive exceeds that of the locomotive using superheated steam, when both do the same amount of work. Also, on account of the volume of superheated steam being greater than an equal weight of saturated steam for equal work, a longer cut off may result from expansion below the point of saturation and some of the advantages of superheating will be lost. Therefore, on new locomotives fitted with superheaters, it would seem advisable to slightly increase the cylinder volume to insure the greatest benefit.

It has been found that there is a limit to the temperature at which flat slide valves can be successfully used with superheating. Piston valves should be used in connection with the high pressure cylinders of compound engines, but as the high pressure valves do not have the cooling effect of the low pressure exhaust as in simple engines, it is necessary to use a longer cut off or larger cylinders.

A superheater is very simple mechanically, and its use requires no radical change, except in method of lubrication.

Thus far, nothing of an unsatisfactory nature has developed in connection with the tests made of superheaters on locomotives. There are several types of foreign and American superheaters that are now undergoing tests in connection with American locomotives, which will determine at an early date as to the relative efficiency in operation, together with the economy for installation and maintenance.

For simple cylinder locomotives, the superheaters now in use are designed so that they can be used with the old as well as the new locomotives, and adjusted to meet any boiler conditions without loss of boiler efficiency. For actual practice it is necessary to determine the exact expense for maintenance and possibility for failure of a superheater before it can be recommended, as any complication of parts liable to cause trouble should be avoided in locomotive practice.

While tests so far made have been on locomotives operating in good water districts, it is believed that the large 5-inch, or greater diameter of flues containing the superheater pipes, will not give serious trouble, and while they need slightly more attention than the regular sizes of tubes, the decreased demand on the boiler reduces the amount of repairs needed by the latter sufficient to compensate for the additional work required on the larger tubes.

The objectionable features of superheaters have been the bent tubes and inaccessibility for repair purposes; also the location of the device at the head end of the boiler, where it is most liable to be put out of service through casualty. Other disadvantages are that the furnace flues passing to the superheater are susceptible to leakage and require frequent repairs and the superheater tubes can not be examined without being taken out, with resulting damage and renewals. It is also brought out that there must be a waste in the furnace gases used for the superheater effect and that the highly superheated steam may be injurious to the machinery with which it comes in contact.

As suitable lubricants are now obtainable with a flash point which will always be higher than the mean temperature of the cylinder walls, no difficulty should be experienced in maintaining efficient lubrication by mechnical method through the possibility of the decomposition of the lubricant.

Superheating is being forced to 554° Fahr. on the Prussian State railroads. When steam is superheated to 500° Fahr., a saving of 16 per cent. in steam and 12 per cent. in fuel can be obtained, as compared with similar locomotives using saturated steam, the greater saving in water than in fuel being due mostly to the prevention of losses caused by condensation.

The cost of improved superheaters with straight tubes and accessibility for repairs should be considerably less than the cost for compounding, and when the cost of fuel, forcing of boilers or water conditions, warrants the use of an especial appliance for economy, superheating will be a desirable adoption. As the apparatus can be applied to old locomotives at about the same expense as to new ones, there is an abundant opportunity for its introduction on a large number of locomotives at a comparatively small cost for the increased efficiency.

While a difference of opinion may exist as to the type of superheater that is best, and which actual performance and observation up to the present has not determined, it is known that good results have been accomplished through tests made in foreign countries and in America, and the fact that superheating is a feature that must eventually enter into locomotive operation should induce American motive power men to give the matter more serious and immediate attention than has been done heretofore.

Radiation.

It has long since been pointed out as to the enormous loss of power that has been continually going to waste through heat radiation, and to prevent which but rather indifferent efforts have been put forth.

From the fact that the radiation from a hot body increases as to the temperature rises, every attention should be given to the proper clothing of all parts of locomotive boilers and machinery that are generators and containers of high pressure, which would otherwise be exposed to the atmosphere. The rate at which the loss of heat extends will depend upon the difference in the temperature of the body emitting the heat and the surrounding atmosphere and the condensation of steam inside of an unprotected steam pipe is dependent upon the temperature of the steam within, the temperature of the air without and the velocity of the movement of that air. The metal composing the cylinders of steam engines is such a good conductor of heat that it responds instantly to the changes of temperature and a great many efforts have been made to keep the cylinders sufficiently hot to prevent the wasteful effects of what are known as initial condensation and re-evaporation at the beginning of the return stroke.

Under all ordinary conditions, condensation is so great as to warrant a considerable expenditure for its prevention, and the most practical method for lagging cylinders and other surfaces transmitting steam is to make a design such as will locate these parts where they will be less exposed and then make use of a good nonconducting lagging, having the minimum facility for conveying heat, properly applied, which will result in as practical means to prevent radiation as can be arrived at at the present time.

A variety of methods to prevent radiation, such as steam jacketing, dead air spaces and other processes favorable to sluggish conduction, have been attempted from time to time but without satisfactory results.

In considering the proper material for a lagging, the principal elements are nonconductivity, noninflammibility, efficiency, economy, ease of application, structural strength to withstand frequent removals and re-application, freedom from corrosive agents, ability to withstand indefinitely the disintegrating effect of the action of heat, and the vibrations and concussions incident to locomotive action.

In addition, the covering should be only of material which is of a porous or spongy nature, with numerous cells or spaces, which will retain air between the particles of the substance.

Of the various materials used for lagging, magnesia may be considered one of the best and most practicable for use in connection with locomotive service. This composition is of a strict neutrality, and composed of inert mineral matter that will exert no chemical action, corrosive or otherwise, upon any metallic surface with which it may be brought in contact. It will remain unaltered under all conditions of heat and moisture which confront the coverings of locomotive boilers. It has qualities of lightness, firmness, structural strength and porosity, the latter quality especially, upon which depends largely the efficiency as a nonheat-conductor; and this quality being most pronounced in magnesia, it affords the greatest resistance to the transmission of heat. It can also be molded into sectional blocks of any form and size desired for ready application and removal.

But few of the locomotives in service today, especially in this country, have any part of the cylinder heads, steam chests, cylinders or any other heat radiating surfaces protected with any kind of nonheat-conducting covering, which should be done to increase the efficiency of the engine, by at least partially protecting these parts from the almost unrestricted drain of mechanical energy through the dissipation of heat.

Cylinders and Frames.

The development of locomotive tractive effort during the past ten years has made necessary owing to the inauguration of high steam pressures and large cylinders. The increased power produced in the cylinders has transmitted stresses to the cylinders themselves, as well as to the connecting frames, which has resulted in an increased number of breakages and failures of these parts. This, together with the preference that has been given to the movement of tonnage without consideration of speed, has contributed largely to the low average modern locomotive mileage and the high costs for maintenance and operation.

The constant necessity for re-boring, application of bushings, and renewals of cylinders as a whole, as well as of their detailed parts, in connection with large compound and simple cylinder types of locomotives, has been very prominent and expensive. Much of this cost can be attributed to incorrect proportions in general and detailed design; improper material, foundry practice and workmanship; restricted and badly arranged passages for the prompt release of exhaust steam and water of condensation; insufficient and defective means of lubrication; defective packing to high pressure piston heads, allowing accumulation of excessive pressures in low pressure cylinders and permitting locomotives to be generally run in the service with defective parts and improperly operated.

It is a difficult matter to combine in one casting a cylinder of such metal as will provide for the strength that is required, as well as for suitable wearing purposes and the bushing of the wearing parts of all cylinders, when they are newly applied, is recommended to improve results and to facilitate maintenance.

There is no part about the locomotive of equal importance to the piston, which has received so little intelligent thought and attention. Piston heads worn much smaller than the cylinder diameter, out of alignment, fitted with badly designed and constructed or wornout packing rings and used in cylinders out of bore and round, have entailed loss in tractive power and contributed towards boiler failures and maintenance expense to an extent not generally known.

A piston is not accessible for constant inspection and should be of a strong and light design and constructed of the least number of parts. The solid type kept closely fitted to the cylinder bore and provided with two or three accurately fitted and grooved steam balanced snap packing rings of good design, material and construction, when given ordinary attention, will meet the requirements for wear and high steam pressures about as well as any arrangement that has yet been produced for locomotive service.

The use of extended and valve rods for the purpose of carrying a portion of the weight of these parts, although often applied, has been found not only unnecessary but objectionable, even with the largest diameter of cylinders used for cross compound types of locomotives, and the results do not justify the increased complication and expense.

Increased frame breakage can frequently be attributed to the change in the crewing of locomotives from "the regularly assigned" to the "first in first out" plan. This has resulted in the loss of personal attention to the running condition of the machinery by the engineers and in allowing locomotives in the service with axle and crank pin bearings, braces, pedestal caps and driver box wedges out of adjustment, in loose condition and with excessive lateral movement between the driver wheels hubs and boxes, all of which irregularities have not, until recently, been included in the calculation for strength. Faulty design and material, often due to lack of time for preparation of the construction where frames have had to be closed in to accommodate larger cylinder diameters: the inertia of the boiler in relation of the frames; the absence of the cast-iron cab deck plate, which in the older designs rigidly secured the main frames to each other, and the neglect to substitute adequate cross braces and substantially stay the frames throughout against vertical and lateral movement between themselves and to the cylinders and boiler, has contributed largely to breakages. Pedestal through bolts too small in diameter, with coarse threads and nuts improperly secured and pedestal caps of weak design, badly fitted and insecurely applied, have also caused failures of frames which otherwise were of good construction.

(To be continued.)

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Technical Contributions

Pyle National Electric Headlight—VII.

Diseases of Dynamo.—Taken as a whole this dynamo is remarkably durable and the cost of maintenance very small. There are only four parts that can wear out; the governor valves, the two bearings and the commutator. The shaft is made of the very best steel, which is hardened and then ground. Therefore, if lubricated the wear in the journals takes place in the boxes. These bushings can be easily and quickly removed and replaced at a very small expense when worn out, without removing the equipment from the locomotive. The commutator if run without sparking will last for several years and with the new style brush holders with the fixed spring tension should wear indefinitely.

At least nine-tenths of the mishaps that occur with this device arise from causes strictly within the province of the engineer. Many of the mechanical faults that develop in this device might be avoided if the engineer possessed a better knowledge of the general conditions which obtain in the running of this machine, therefore we are quite certain that if the reader of these articles will peruse same with the view of improving his condition, there will seldom if ever be an emeregncy arise which he can not immediately overcome.

It is impossible and unnecessary to give a complete direction for each little trouble that might arise. However, a few of the most common causes from which trouble arises within the dynamo will be explained.

The engineer should have it impressed upon his mind that when the light fails—goes out—the dynamo should not be run for any length of time, as great damage might result, such as burning out the armature or the field coils.

A short circuit does not mean literally that the current is passing through or over a shorter distance to get back to the dynamo. Electric current seeks it own electrical level, it must be remembered, just as water seeks its water level and, like water, flows where there is least resistance. The most common cause for trouble with this device is short circuits in the wires; therefore, when an equipment is applied or rewired, great care should be taken to know that the wires are carefully protected. Short circuits sometimes occur in the cab wires and at other times in the main wires that run to the lamp. These troubles are brought about by the insulation chafing off the wires and the exposed wires coming in contact with each other, either directly or through the medium of a bolt, hand railing, etc. It must be remembered that the insulation on these wires is to the current flowing through them what the pipe is to the water flowing in its orifice, and should a hole come in the insulation and the wire come in contact with some metallic substance there would be a leak or "ground;" should the insulation be worn off both wires and they come in contact, as explained above, there would be a short circuit. This means that it would be easier for the current to pass through this short path to return to the dynamo than to pass through the lamp, where it would meet with opposition and thus produce the light which illuminates the track; so if no current was passing through the lamp there could be no light.

Sometimes one of the main wires may break or the carbon stick up in the clutch; in either case the circuit will be broken and the light will, of course, go out. It is not possible for the engineer sitting in his cab and running at the rate of sixty miles an hour to tell which of the above troubles is his, but if he will shut off steam to turbine and stop the dynamo he can prevent any further trouble or damage, and when the first stop is made he can readily determine just what is wrong and no doubt have his light going in a moment. If time is short, as is often the case at such times, when starting out to locate trouble turn on steam with about the same throttle opening used when lamp is operating; pass out to dynamo and note if it is running rapidly and light (making very little noise), or running slow, laboring heavily and making a great deal of noise. If the former condition is noted the wires are not connected up or are broken; in any event there is an open circuit. To tell quickly just where the trouble is, first test the dynamo by placing carbon or wrench across from one binding post to another (28 and 29, Fig. 5, Part III); if there is no "flash" at these binding posts the trouble is in the dynamo, and it is not likely that the one in charge will be able to make the necessary repairs. However, it may be that one of the field connections is loose and this of course could be repaired by tightening the loose screw. If there is a flash the dynamo is all right, and the break is on toward the lamp where the carbon must be tried across the binding posts at that point; if no flash results the trouble is between this point and the dynamo, where it will be found that one of the wires is broken. Obviously the cure for a broken wire is to repair it. This is easily done, it only being necessary to strip the insulation off the ends of the broken wire, so that the two ends of the naked wire may be twisted securely together, then cover this connection with anything you may have at hand that will thoroughly insulate wire. In making the above test, if a flash is produced at binding post at lamp the trouble is in the lamp, where, upon investigation, it will be found that the carbon and copper electrode are not in contact with each other. They may be separated by a scale that has formed on the point of the copper electrode, or the carbon may not be of sufficient length to touch the copper electrode, or it may be hung up in the clutch on account of its own imperfections and irregular contour. And again, it may be found that a scale has formed around the copper electrode separating the latter from the holder. However, upon investigation the difficulty will be found in one of the above-mentioned troubles.

On the other hand, if the dynamo is running very slow, laboring heavily and making a great deal of noise, it denotes that there is a short circuit. To locate this trouble, first remove one of the main wires from binding post at dynamo. If the machine continues to run slow and there is a cab circuit, disconnect one of the cab wires. If the dynamo instantly increases in speed the trouble is in the cab circuit. The main wire may be returned to binding post and the benefit of the headlight secured, while the cab wires must remain disconnected, and you can locate this trouble at your leisure. If, however, when the cab wire is removed the speed does not increase, the trouble may be found in the engine, where one or both of the plunger valves may be stuck almost, if not entirely, closed. If the governor valves are responsible for this failure and slow speed, there will be but a small amount of steam escaping from the exhaust pipe. If it is not found in the engine the trouble is in the dynamo. In the latter case it will be found necessary to run the remainder of the trip without the electric headlight. If the trouble is caused by governor plungers sticking, same may be released by jarring with hammer on the outside of casting, or if top plug in engine casting is removed and a little black oil or coal oil is introduced in this opening, when steam is turned on again this oil will be blown against face of governor plungers and may release them by cutting away any scale that might have caused them to stick. If the speed instantly increases when wire is removed from binding post at dynamo, the trouble is not in the dynamo, engine or cab circuit, but on toward the lamp. Now return this wire to binding post at dynamo and go to lamp. There remove one of the wires from binding post, and if the speed of the dynamo does not instantly increase the short circuit will be found in the wires between the dynamo and lamp. All that is necessary is to find and wrap the exposed wire, and thus re-establish the circuit by forcing the current to pass through the lamp, instead of returning to the dynamo by way of this short path. If, when the wire at lamp is removed, the speed of dynamo instantly increases, the trouble is not between the dynamo and lamp, but in the lamp, where it will probably be found that thumb nut *79* has not been tightened securely and allowed point of carbon to pass point of copper electrode, or that it is stuck fast in clutch and against electrode. In either case all that is necessary to overcome trouble is plainly seen. Simply straighten the carbon up and tighten thumb nut *79* securely, and note if carbon will raise and fall freely through clutch *44* and to point of copper electrode. A "short" can occur in insulation *96* at both top and bottom bracket or in insulation washers *97* at binding posts, or in insulation bushings around binding posts, where posts go through lug on lamp column. These insulations never give way, however, so a short circuit will never be found at this point unless some workman has had lamp to pieces and failed, in reassembling, to return all insulations.

The above constitutes all of the electrical troubles that ever occur to this device, and *all can be avoided if care is taken when wiring is done.*

Special Instructions to Inspector.

Perhaps the one most responsible for the success or failure of the electric headlight is the one making the inspection or repairs before it is sent out on the road. An occasion seldom arises where it will be found necessary to devote more than a few moments each day to put this machine in perfect working condition. There is little to do other than to wipe the commutator clean, see that the mica does not interfere with perfect contact between the brushes and commutator, and that the insulation on the wires is in good condition and all screws are tight. See that the point of the copper electrode is clean, that there is a carbon of sufficient length in the lamp to take the engine over the division, and that the bearings are properly lubricated. But the most important part of the inspector's work is to know that the lamp is in focus.

No doubt the most satisfactory way to focus the lamp is to place the locomotive on a piece of straight track and proceed as outlined in chapter on "Focusing of Lamp," for the reason that the cage does not always set straight and level on the arch and the best angle for the shaft of light can be obtained by shifting the reflector.

As a very large percentage of the locomotives equipped with the electric headlight are in what is known as "pooled service," and it is not always possible for the repairman or inspector to go with the locomotive to a piece of straight track, a few measurements given below, if conformed to, will result in a perfect parallel beam of light being drawn.

1. Drain water of condensation from oil cellar in engine cap each trip and oil this bearing.

2. Note if loose ring suspended by shaft and in oil cellar of main bearing touches oil, and, if not, introduce enough oil in cellar so that it will. Use oil for this bearing thin enough to be carried by shaft to bearing proper. Would recommend black oil.

3. Note if stuffing-box gland nut is packed securely. If steam is allowed to blow at this point it will pass along shaft and will blow the oil from the shaft that has been carried up by loose ring, and shaft and bushing will be destroyed in short order.

4. Know that the commutator is true, smooth and mechanically clean; that there is no dirt in grooves between commutator bars, and that the mica does not project above surface of commutator bars or interfere with perfect contact between commutator and brushes.

5. See that brushes have good bearing and are of sufficient width to just cover two of the commutator bars; that they are not "stuck" or tight in brush clamp, and are bearing with sufficient pressure against commutator bars, and that no sparks are seen at points.

6. See that both wires are held securely in binding posts and that binding post screws are tight against wires at both dynamo and lamp.

7. Examine very carefully where wires may enter pipes, hand railing or cab; also examine wires inside of cab and do not allow them to hang where insulation might be chafed off and wires come in contact with pipes or some other metallic substance.

8. Know positively that the insulation on all wires is in good condition.

9. Know that the insulations in lamp are in good condition.

10. Note that there is carbon in lamp of sufficient length to make next trip.

11. See that the carbon will fall all the way through clutch.

12. Know that the clutch will lift carbon at least one-fourth of an inch from point of copper electrode.

13. Be sure that link (*63*) will not allow magnet yoke (*90*) to travel more than half way between lugs on lamp column when lost motion is taken up in levers and clutch point before carbon is started from point of copper.

14. Know that copper electrode is pointed up with one-eighth-inch surface on point.

15. See that point of copper electrode is clean.

16. Be sure that copper electrode is not "stuck fast" in holder.

17. See that point of copper electrode lines up true under carbon.

18. See that points of carbon and copper, when lined up, are in center of reflector.

19. See that dash-pot plunger is not too tight in cylinder. If not tight, light will go out when locomotive is at rest. (The correct fit of plunger in cylinder is found when cylinder is turned up and plunger will fall slowly of its own weight to bottom.)

20. Know that tension spring (*93*) is only tightened so the light will not go out when locomotive is at rest.

21. See that lifting end of lever (*59*) is under clutch-rod weight (*78a*.)

22. Know that thumb nut (79) that secures top carbon holder in top bracket (57) is tight.

If an equipment is inspected as outlined above there is no possible chance for a failure to occur. This, with the perfect focusing of lamp, gives ideal service.

To properly focus lamp, know first that the cage sets straight and level on arch of locomotive; then move reflector until front edge is parallel with front end of cage, when you may remove lamp and reflector to work bench, and there proceed to focus lamp as per instructions given below.

If your reflector is 18 inches by 9 inches, place center of top of copper electrode in center of reflector and 2¼ inches forward from center of back of reflector; tighten lamp securely in this position, then drop point of copper electrode one-eighth inch below the center.

A strict conformity to above given rule will establish a perfect parallel beam of light, without any crossing of rays.

Below is given the point of image or focal point in a few other styles of reflectors in use throughout the country. Where reflectors of different dimensions are used, proceed as per instructions given for 18-inch by 9-inch reflectors, the only difference being in position of point of copper electrode in relation to back of reflector.

Reflectors.	Distance from back.
16 inches by 8 inches........	2⅝ inches
18 inches by 9 inches........	2¼ inches
18 inches by 12 inches........	1¾ inches
23 inches by 14 inches........	2⅛ inches

Speeds of dynamo should be taken at least once in every thirty days and a record kept in a book for reference. The maximum speed of this machine is 1,800 revolutions per minute, with the load on or light burning. When governor plungers are set and faced properly, the speed shown with load off should not go above 1,850 or 1,900 revolutions per minute. In taking the speed from time to time it will be noted that the speed will increase with the load off, due to the fact of the steam cutting the face of the governor plungers away; but the speed should not be allowed to go above 2,100 revolutions per minute with the load off. When speed is found to be this high, it is then time to face the governor plungers off and bend arms to bring valves on seat when weights are drawn to right angle to face of turbine wheel, as per instructions.

Would advise a record be kept corresponding to form below:

Engine No.	Equipment No.
173	3742
Speed, with Load,	Speed, no Load,
1,800	1,850

Special Instructions to Engineers.

This machine was designed to meet the requirements of the most severe locomotive practice in the hands of the most careless engineer, yet it is not self-adjusting or automatic.

It is simple and easily understood and requires but a few moments' attention each day to insure an ideal light.

It is hoped that those who have taken advantage of these articles will study them with a view of bettering their condition as operators of this device.

Do not forget that the commutator is the vital part of this machine, and if kept clean (which is easily done), and the correct spring pressure maintained upon the brushes applying the carbon as outlined in chapter on lamp, the electric headlight will be found as reliable as your watch, if kept wound.

In starting dynamo turn on steam slowly and allow the water of condensation to pass out of pipes and turbine. By starting your equipment in this manner there will be little or no danger of your ever fusing your copper electrode, for the reason that you will have brought your speed up with dry steam. Do not forget *to turn on only steam enough to get a good light.* Do not be afraid of receiving an electric shock from this device, as this can not occur. The resistance of the body is far too great for this low voltage to force a current through, and one need have no fear in handling the wires or dynamo freely when in operation.

J. Will Johnson.

* * *

The New York No. 6 Duplex Air Pump.

The duplex air pump shown in the illustrations, Figs. 1 and 2, is known as the New York No. 6. Its design and proportion of parts is the same as that of the New York No. 5 duplex air pump, which was illustrated and described in the December, 1904, number of the Locomotive Firemen's Magazine.

The operation of the No. 6 pump is the same as that of the other New York duplex air pumps, hence a description is unnecessary.

The principal dimensions are shown on the drawings, and from these the size of the pump may be learned.

The No. 6 pump is designed to supersede, or take the place of, the No. 2 duplex pump, and is intended for service on locomotives of medium size.

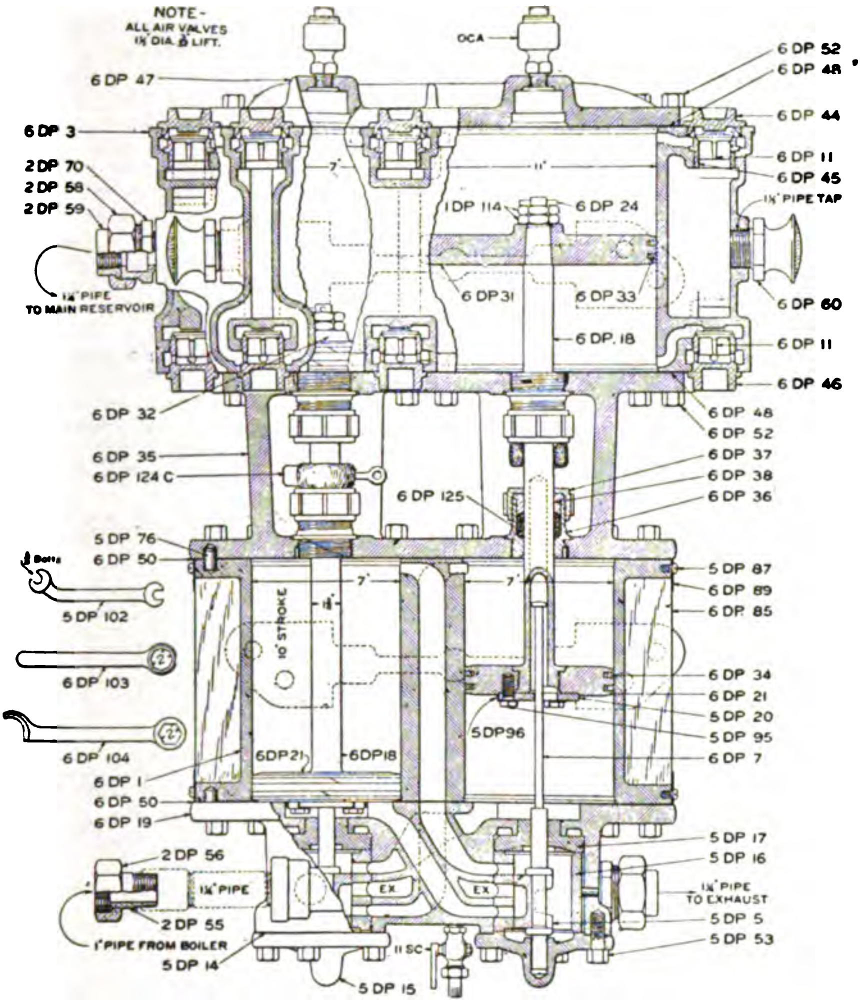

Fig. 1. New York No. 6 Duplex Air Pump

The low pressure air cylinder of the No. 6 pump has a diameter one inch greater than the low pressure air cylinder of the No. 2 pump, and the pistons have one inch more stroke. Hence, the capacity of the No. 6 pump is considerably greater than that of the No. 2 pump.

J. P. KELLY.

The Air-Brake Association Convention.

Concluding the report on the 1905 convention of the Air-Brake Association, begun in the May number, the next paper considered was:

Best Brake Rigging Design to Accomplish Harmonious Action of Air and Hand Brake on Passenger and Freight Cars.

This excellent paper was presented by Mr. L. M. Carlton, M. M. (formerly Genl. A. B. I.), C. & N. W. Ry. The following quotation presents the relative advantages and disadvantages of the two distinct types of brake rigging.

"There are two kinds of hand-brake designs, viz., those which pull opposite and those that pull with the air brake. The former have been used quite extensively on passenger cars, while the latter have been confined to freight service. Some freight cars are equipped with a double hand-brake, one of which worked with the air brake, while the other worked opposite to it.

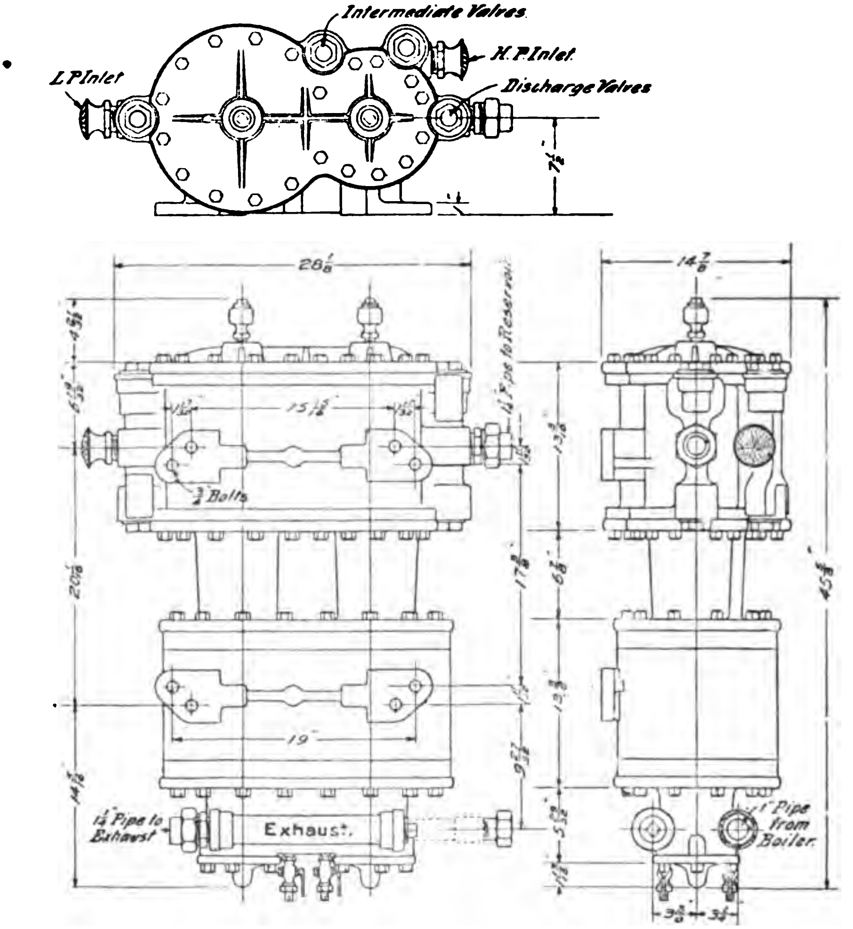

Fig. 2. New York No. 6 Duplex Air Pump

"Now, to consider the disadvantages of the hand brake that pulls opposite to the air brake:

"1. There is a liability of injury to trainmen while using the hand brake, if the air brake should be applied at the same moment.

"2. The hand brake may be wound up a few notches, with the dog in the ratchet wheel, thus taking up some of the air-brake piston travel, causing it to equalize the air pressure at a higher point than the other brakes, thus encouraging possible wheel sliding on that car, while the engineman is stopping the train: also danger of the chain breaking, if hand brake is wound up enough to pull the hand brake rod away from the stop.

"3. If the hand brake is used to help control the train on a grade, and the hand brake were applied first, the brake piston would not travel over the leakage groove, and would allow the air brake to leak off.

"4. Where the cars are stopped on grades with the air, and must be held there indefinitely by hand brakes, the air brake must first be released before it is possible to set up the hand brake. This is a dangerous practice if precautions are not taken to block the car while changing from the air to the hand brake.

"The advantages of the hand brake that pulls with the air brake are:

"1. No liability of injury to trainmen while using the hand and air brake at the same time.

"2. The hand brake will not shorten the piston travel.

"3. Where the cars are stopped on grades, the hand brake can be immediately used to hold the car without bleeding off the brake."

Following this were illustrations of various types of brake rigging, with brief comments on the good or bad features of same. It was shown that one only of the double hand brake or passenger designs with which the hand and air brake operated together enabled the type of automatic slack adjuster which operates on the brake cylinder connections to keep up the slack for the hand brake, as well as for the air brake. This is quite important, for the reason that when hand brakes are necessary, as in switching or when pump failure demands their employment, any inefficiency is liable to result seriously, particularly on steep grades.

It was pointed out that with the common form of freight car brake rigging the cylinder lever is sometimes extended as much as 12 inches between the piston rod and hand brake connections, causing much higher braking power on the truck at the hand brake end, as compared with the other, when the hand brake is used. In the case illustrated, the two trucks were braked at 123 per cent. and 80 per cent., respectively.

It was shown that with the usual arrangement of double hand brake used on freight cars and cabooses, one hand brake works with and the other against the air brake, that the latter shortens the piston travel and increases the air braking power on one truck, if slack is taken up on it, and that this design is unnecessary and undesirable. With it the hand brake opposing the air brake is connected to a lever that operates in a slotted fulcrum bracket. The hand brake that works with the air brake is at the end of the car toward which the piston rod points.

The paper also illustrated three forms of hand brake staff and chain arrangement. One showed a design of stirrup or foot rest for the staff that is liable to cause the chain to catch and render the hand brake useless. Another showed how this could be avoided, and the third illustrated a projecting eyebolt for the chain connection, the object being to wrap up considerable chain at the first one-half revolution, so as to quicken the application and reduce the liability of the chain wrapping double, which greatly lessens the braking power that can be obtained. Other features mentioned that tend to prevent this fault are the use of chains no longer than necessary to allow the air brake push rod to return to its full release position, and making the chain connection to the staff as high as practicable.

Discussion.—Mr. Wyatt Carr (N. Y., O. & W.), said many flat wheels are caused by the type of freight car hand brake that applies more power to one truck than to the other.

Mr. C. C. Farmer (W. A. B. Co.) stated that one car building company was then equipping some new cars with automatic slack adjusters and a form of hand and air brake rigging working together, but which prevented the automatic slack adjuster from taking up the slack for the hand brake. He urged that air brake inspectors for railways watch this feature when new cars are being purchased, so as to get a design free from this and other objections mentioned in the paper.

After a thorough discussion of the various designs of brake rigging, the following motion was put and carried: (1) That the hand and air brakes should operate in harmony; (2) that the design used with an automatic slack adjuster should be such that this device will take up the slack for the hand brake, as well as for the air brake (3) a design that will result in the hand brake developing equal power on both trucks; (4) that this association respectfully recommend that the Master Car Builders' Association change from their present recommended practice for double hand brake to a type without its disadvantages; and (5) that the hand brake parts be so designed as to prevent the chain from fouling.

Maximum Brake Force As Regards Foundation Brake for Passenger and Freight Cars.

This paper was presented by Mr. F. M. Nellis, the originator of the plan outlined for determining the maximum amount of braking power, as controlled by the foundation brake, or, as it is more commonly termed, the brake rigging, for each car. The following quotation explains the objection to the present method:

"It is a noticeable fact that since air brakes were first applied to heavy passenger cars the sliding of wheels has been confined to the cars of the lighter classes, and the heavier class cars have been almost entirely free from such troubles. We do not have to go far to ascertain the cause of this. In designing brake gear for a passenger car, 10 per cent. of the light weight is deducted, the remainder being used as braking power, and divided up proportionately among the pairs of wheels under the car. By this method, as will be seen, the unbraked weight, while being constantly 10 per cent., varies greatly in actual pounds; that is, 10 per cent. does not mean the same for a light car as it does for a heavy car. Take, for example, a light car weighing 50,000 pounds. Deduct 10 per cent. of this weight, and the remainder will be 45,000 pounds available as braking power. Again, take a heavy sleeping car weighing 100,000 pounds, deduct 10 per cent. for unbraked weight, and we will have 90,000 pounds available as braking power. While 10 per cent. has been deducted in both instances, only 5,000 pounds unbraked weight, or leeway under the safety limit and slid flat wheels, has been allowed on the light car, and 10,000 pounds unbraked weight, double the amount allowed the lighter car, has been allowed for the heavy car. Such an uneven method seemed manifestly wrong, and it was with this in view that the writer of this paper believed the 90 per cent. braking force plan was unjust to the lighter passenger car and discriminated in favor of the heavy-weight passenger car at the expense of the skidded wheels under the lighter car. When wheels under the car are skidded, the cause thereof is usually sought for somewhere in the brake or the brake rigging, under that individual car. Quite as frequently should the trouble be sought for elsewhere, especially in passenger trains, where light and heavy cars are mixed indiscriminately, and braked on the 90 per cent. basis."

Since the introduction of the quick action brake it has been customary to base brake rigging calculations, on cars fitted with this triple valve, on 60 pounds pressure being obtained in the brake cylinder in an emergency application made from 70 pounds train-pipe pressure. Mr. Nellis argued that, as the full service application gave but 50 pounds cylinder pressure, there would be several advantages in using 50 pounds as the basing pressure. He did so on an experimental train on the N. Y., O. & W. R. R., and reported excellent results in the way of holding power and no flat wheels during two years of service.

His proposal is to so design the leverage that 50 pounds in the brake cylinder of each car will develop on every pair of wheels a braking power of within 1,500 pounds of the weight put upon the rails by the wheels with the car empty. Stated in percentage, this would mean that the greater the weight on each pair of wheels the higher per cent. would such be braked at.

Commenting on the effect of this in ordinary service applications, he says:

"The unbraked weight plan employs a more powerful leverage, being based on 50 pounds cylinder pressure, service application, and on a uniform, predetermined allowance of 1,500 pounds unbraked weight per axle, regardless of the weight of the car, and effect is immediately felt upon the first reduction of train-pipe pressure when making a service stop. Take, for example, the 103,000-pound parlor car, the heaviest car in the New York, Ontario and Western experimental train. Make a train-pipe reduction which will give 10 pounds pressure in the brake cylinder, and this 10 pounds brake cylinder pressure gives in the new system nearly 18,600 pounds at the brake shoes of the car, neglecting friction of the foundation brake gear and resistance of the release springs. In the 90 per cent. plan, 10 pounds in the brake cylinder gave on the brake shoes only about 14,000 pounds, or about 26 per cent. less than the new system gives. Likewise, during the entire service application of the brake, this ratio of improvement carries through."

While recommending this plan for immediate consideration for passenger cars he suggested deferring its use on freight cars until some future time.

Discussion.—Mr. Nellis (W. A. B. Co.) said he did not recommend that the association now adopt this plan for passenger cars, but that the members try it. He called attention to some modern passenger cars already exceeding in weight the limit given for the 16-inch brake cylinder, and that the best means of meeting this should be considered, the cylinder mentioned being the largest made. He also conceded that the more powerful the service brake the rougher the braking would be with careless use.

Mr. Fredericks (P. R. R.) indorsed the plan, saying that in one of their 10-car trains, two cars weighed from 30,000 to 40,000 pounds, and seven much over 100,000 pounds; that the first have cast-iron wheels and the others steel-tired, and that the lighter cars often had flat wheels after passing through the Baltimore tunnel.

Mr. Carr (N. Y., O. & W.) said they have three tunnels seven-eighths of a mile long, the same wheel conditions as Mr. Fredericks described, and had no wheel flattening with the plan Mr. Nellis proposed. He added that one tunnel had a grade of 80 feet to the mile, and that the others were level.

Mr. Draper (N. P. Ry.) expressed a favorable opinion of the plan, but asked why 50 pounds was proposed as the basing cylinder pressure. Mr. Nellis advised that it was because this amount was obtained in all sizes of cylinders in a full service application, but that an emergency application gave 60 pounds in the smaller cylinders only. At the same time he indicated the need of an automatic reducing valve on each car, and said that, while some should ordinarily be set at 50 pounds, it could be adjusted for 60 pounds if needed on steep grades.

Mr. Parker (G. N. Ry.) spoke in favor of using a fixed unbraked weight per axle, as the plan is termed, and of the Association going on record to this effect, but called attention to the adoption of the 50-pound brake cylinder basis rendering many of the present brake cylinders too small, owing to the high total leverage their retention would cause. Hence, he expressed doubt as to its desirability.

Mr. J. P. Kelly (N. Y. A. B. Co.) indorsed the 50-pound brake cylinder basis, but said he was not ready to unqualifiedly approve of the fixed unbraked weight per axle, that it is a very complicated problem, and that the end we should seek is the equal distribution of retardation throughout the train.

Mr. Burton (W. A. B. Co.) said that while in railway service he had followed a similar plan to that proposed, and had seen no bad results. F. B. Farmer.

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Movement of Trains

By H. A. Dalby

For the Employes' Benefit.

A quarter of a century ago the writer worked for a small road which is now a part of a large system. It was in the good old days when every one knew every one else, including the superintendent. The latter, who has now gone to his reward, used to think of the boys on the road occasionally, as well as of the board of directors and the figures representing the quarterly dividends. He kept the Sabbath, and every one else had a chance to keep at least a part of it.

On this road there was a library and reading room at the division terminal for the use of employes. There was a small fee for taking out the books, but books cost more then than they do now. This helped to defray the expense, but the company paid a fair share. The superintendent also encouraged the men to belong to the life insurance association organized among the employes. These two institutions, small in their way, were among the pioneers of such things, and aside from the pleasure and profit while living and the benefit to family and friends after death, they did much to reunite the employes into a common family and to produce and maintain an acquaintance with each other and with the officers, which is hardly possible with the large and more complex divisional organizations of today.

The idea of providing a means for the comfort and welfare of the men, however, never entirely died out, and within the last decade a large advance has been made along that line. For those in the train service especially (though not for them exclusively) may now be found at almost every terminal a place where they may rest and sleep, where reading matter is furnished, and where certain forms of recreation may be enjoyed. They are either furnished free, or at a small cost.

The growing necessity for the education of trainmen and others in the transportation department, in order to properly perform their duties, has probably lent its influence to movements of this kind, so that with rest and recreation are often coupled educational features of the highest order.

One of the oldest railroad beneficial associations is the Baltimore and Ohio Relief Department, organized in 1880. The membership is optional, but a majority of the employes are members. The company contributed $100,000 at its formation, and now spends in the neighborhood of $16,000 annually for its maintenance. Medical and surgical aid is rendered when necessary, and thus many thousands of dollars have gone into the homes of employes, while the lack of this care would have caused suffering and need.

A feature of this institution is the savings department, which is conducted on the same principle as a savings bank, but with larger profits. Any employe may become a depositor and receive 4 per cent. for his money. For several years an extra dividend of 1½ per cent. has been paid, making 5½ per cent., a fairly good investment, considering that it can be withdrawn at any time. From this fund they can also obtain loans, probably on much more favorable terms than with an ordinary business concern.

Members of the relief department are eligible to pensions at the age of 65, providing they have been in the company's service ten years and a member of the relief department four years. The company pays the pensioners entirely, such funds being distinct from those used for relief work.

The beneficial features above outlined are representative of what is being done, wholly or in part, by many other companies for their employes. They differ on different roads, but all have for their object care in the time of sickness and self-improvement when in health. Some of the large Western systems have for many years maintained a medical and hospital service for the indiscriminate use of employes, who are assessed a small amount each month to help toward its support. The companies own several hospitals, and make arrangements with many others where the service is the same, and the company's physicians at various points along the road furnish their services at call.

This plan of keeping employes well appears to be a most reasonable one, and doubtless the companies realize the value of it for the good of the service, as well as the benefit of the employe. The writer has long thought that medical and surgical service should be free to every person and maintained at public expense. Doctors' fees keep many a person sick who might otherwise be well. It would seem as important to keep people well as to educate them, and this is done through the public schools without question. A small amount from each one is not missed, and is insignificant when the difference between a well person and a sick one is at stake.

An adjunct to the medical and hospital service is the equipment of cabooses and baggage cars with supplies for rendering "first aid to the injured." This usually includes bandages and medicines likely to be needed, and at convenient places along the line may be found stretchers for emergency use.

Twenty or more railroad systems have provisions for retiring employes on pensions at the age of 65 or 70 years. With a few limitations, all employes are eligible to these benefits, and the funds are provided by the companies.

There are at least two large systems that make special inducements for employes to purchase capital stock of the company. It may be obtained on easy terms, the amounts drawing interest from the time they are paid in, and may be withdrawn at will. This is much the same as the savings feature before mentioned, with the addition of the fact that the employe thereby becomes a part owner of the road, sharing in its profits with the other stockholders.

A large system running through the Southwest issued a communication to all employes advising them to purchase land along the line of the road, either for homes or for investment, and offering through its own land department to aid those who wished to do so by advice as to selection, and by obtaining easy terms of payment. By this means the employe grows to have a real interest in the road for which he works, and by sharing in the relief and benefit features, especially if he is fortunate enough to work where there is a pension plan in operation, he knows that in case of accident or sickness he will be taken care of, and when he arrives at the age when he would like to be relieved from the cares of active service he will still have some income, and will not be compelled to sever his connection altogether with the company to whom he has given the best years of his life. It is not a charity on the part of the company, neither is it merely a return for what is paid into the benefit fund.

It is for the mutual good of the employer and the employe.

Railroad Education.

The matter of education and training for railroad men is receiving quite as much attention by officials as is the subject of the foregoing article. It is a matter of benefit for both the individual and the company. The former is enabled to earn a larger income and perform a work which is of larger satisfaction to himself, as well as of greater good to others, while the latter has the benefit of having its work done in a systematic and scientific manner.

At the last annual convention of the American Railway Master Mechanics' Association one of the most important topics of discussion was that of education for engineers, firemen and shopmen. Many who were in attendance gave interesting accounts of the methods they used for training their men, and on a number of large systems there are regular courses of instruction in connection with roundhouses and shops. The statement was emphasized that the duties connected with all parts of the motive power department were of a character that demands special training, and that the successful men of the future, both workmen and officials, must be provided for in the way of proper education and training.

Some months ago one of the leading railroad journals devoted considerable space to the subject of the roundhouse foreman. It was developed that the men in this position were not sufficiently experienced, trained and educated to properly fulfill the requirements of the position. It was thought that in many cases the salary offered was not such as would tempt a good man, but whether that be a chief consideration or not, the fact was recognized that the roundhouse foreman should be a man thoroughly trained in every detail of the motive power department.

Some roads have already started on a well-defined policy of education, and others have the matter under serious consideration. It is said that the Lake Shore and New York Central Lines have established a course of instruction for firemen, which is to cover a period of three years. At the end of each year he is required to pass an examination, and must attain a standing of at least 80 per cent. in order to be eligible to promotion to the right side of the cab. Competent instructors are selected from the best and most experienced men on the system, and every effort is made to develop the best that is in each man and make him capable of the duties and responsibilities of advanced positions.

The Pennsylvania Lines require of a fireman thirteen weeks' service in the shops before being promoted. This is for the purpose of making them thoroughly acquainted with the construction of a locomotive. Similar courses have been pursued on other roads, and it is said that the results are very gratifying.

A prominent example of the desire on the part of the companies to provide facilities for the education of their men is seen in the school established by the Pennsylvania Railroad at West Philadelphia. It bears the name of the Young Men's Christian Association, but, like other railroad branches of the same organization, it is largely, if not wholly, supported by the company. There is a complete course of study in railway transportation, including railroad geography, organization, methods of operation, and, presumably, all that can be successfully taught in this way. The school is under the supervision of the officials of the road, and they are assisted to some extent by professors of the State University of Pennsylvania. There are many scientific branches which bear directly on railroad operation, such as locomotive management, firing, combustion, civil engineering, etc., that can be and are taught in the best colleges of our land, and it seems fitting that the experiences and facilities of these colleges should be united with the efforts of the railroad companies, as is shown in this instance.

Another commendable step is that taken by the Hocking Valley and its allied lines in providing means for instructions in matters pertaining to the handling of trains and engines. The plan is to hold frequent meetings at different points along the line, to which all employes are invited. Certain subjects are assigned and usually an official of the company makes an address, after which a general discussion follows. The opinions of the men are asked and any suggestions they may make are given consideration. It is optional with the men whether they attend or not, but they have thus far shown their interest by good attendance.

The need of thoroughly trained office men has been realized by a number of roads, notably the Canadian Pacific, which has a school at Montreal where stenography, typewriting and telegraphy are taught to its employes and those who would like to enter its service. The small charge of two dollars per month is made for a term of six months, and if the pupil attains a satisfactory standing and enters the employ of the company the money is refunded. The expense is therefore practically borne by the company.

The last few years have seen a number of schools established either under the direct supervision of the railroad companies or being more or less under their influence, and all, probably, of a character befitting the needs of the present day. For many years there was but one branch of the transportation service that was taught in regular schools, and that was telegraphy. For several reasons these schools were not what they should have been, nor were their graduates competent to properly do the work of a railroad telegrapher. We believe thoroughly in competent instruction and education for a man in this position, and believe it can be accomplished with experienced teachers and proper equipment.

Besides these there have been a number of schools started, some with private capital and others in the interest of some particular road or roads, whose officers are also officers of the school. The Wenthe Correspondence Schools, at Freeport, Ill., may be termed a combination of the above, having been organized by Mr. F. C. Wenthe, for whom it is named, but evidently bears the stamp of the Illinois Central, as all its officers are in the employ of that company. Instruction may be taken at the school, but it is also equipped for correspondence courses, and probably much of its usefulness will be imparted by mail.

The importance of systematic training for railroad work is also emphasized by the fact that a number of regular colleges and universities now have railroad departments, where these branches are taught quite as thoroughly as are the other studies in the course.

Aside from regular school instruction, much is being done in the way of lectures, printed matter, etc., for the benefit of employes. It is stated that the Pennsylvania Railroad has printed a number of books for the different departments of the service, giving instructions in detail for the proper discharge of duty. Such a means of instruction could be made much more explicit than a mere book of rules. Rules must be brief and in a set form, leaving the employe to apply them very much as his own judgment dictates, but a course of instruction such as is here suggested could be full of detail and offer many suggestions not apparent in the mere wording of the rule.

Along the same line may be mentioned the recently established Erie Railroad Employes' Magazine, issued each month by that company and sent free to each employe. It is yet in its infancy, and does not embrace much in the way of educational features, but possibly that will come later. It has the appearance of being a splendid medium between employes and the management for the expression of the views of each, and should result in closer relations and more harmonious service.

One of the leading lines of the South has recently created the office of "Examiner of Train Rules," which gives an idea of the object to be attained. It is realized that it is of the utmost importance that the same understanding shall prevail on all parts of a system with regard to train rules and the methods of handling trains, hence the appointment of an officer whose business shall be to thoroughly instruct all concerned in these things.

A few months ago Mr. R. C. Richards, general claim agent of the Chicago and Northwestern, made several addresses to the agents of the company, held at different points on the system, the subject being, "How to Handle Freight Safely." While these talks were prepared especially for agents, they contained much that is of value to conductors, trainmen and even enginemen. They were of such value that the general manager, Mr. W. A. Gardner, caused them to be printed in pamphlet form and distributed to those who are concerned in this branch of the service. To show his opinion of such instruction, we venture to quote from the introduction written by him in sending forth the little volume to the employes. He said: "Those who make rules are not infallible, and those who should observe regulations are not always keenly alive to the disastrous effect which may result from a trifling cause. The severest, most impartial, and always reliable teacher is Experience, and, whether we be machine-made from the university, or hand-made from the universal, no little portion of our success as individuals or corporations is to be attributed to our faculty for avoiding the difficulties which have jeopardized others."

This seems to comprise in a few words the value of instruction from those of more experience than ourselves, and who have had opportunity to study conditions as perhaps we have not. It may be added in this connection that the agents on the above system hold frequent meetings at convenient points, to talk over matters pertaining to their work, and such gatherings can not fail to be of benefit not only to the men, but the service.

In addition to these opportunities for fitting oneself for more efficient service should be mentioned the many railroad clubs, many of which welcome men from any department of the service, and the members are not only entitled to the benefits of listening, but of talking. This privilege is not theoretical merely, but practical. The expressions of each man are welcome. None are too old or too experienced to learn, and there are few who are not able to help others in this way. These clubs are organized on a basis of mutual improvement, and each member should feel it his duty to put into the club quite as much as he draws out.

The spread of the Railroad Department of the Young Men's Christian Association also affords opportunity for much in the way of education. These institutions, which are now located at many district and division terminals, offer not only restful and refreshing comfort to employes who are so situated as to take advantage of them, but have many educational features common to railroad schools and colleges. They are supported largely by the companies on whose lines they are located, the annual dues from each member being small.

The Y. M. C. A. and the various clubs should meet with the hearty support of all employes who can give it, for the benefits are far in excess of the cost.

With all the advantages for education that have been mentioned it remains for the individual to use his own efforts to help himself. An article recently published in a railroad journal was entitled, "After All, the Man." This is an excellent motto. It would be a good one to place in the caboose, the engine cab and the office. The most elaborate and well-planned courses of instruction are of little avail without earnest and untiring work on the part of the student. Automatic signal systems and interlocking switches are splendid things in themselves, but perfect results still depend on the man. Rules may be as good and efficient as it is possible to make them and may be explicit in detail, but the success of their mission depends on the man.

In every city and many a hamlet during the month of June there leave the doors of schools and colleges hundreds of graduates. Many essays, orations and addresses tell these young people that life will be to them what they make it. So it will, with certain qualifications. We are not willing to make the statement that every brakeman may become a superintendent, or every fireman a general manager, though such cases of advancement are by no means rare. What we do say, and say most emphatically, is that he who bends every effort to making himself just as good and as valuable a man as he can possibly be stands a much greater chance of being a superintendent or general manager than one who gauges his effort by the fact of whether he is getting good pay for his work. Pay is a great consideration, and by no means an unworthy one, but increased remuneration is more cheerfully accorded when it is seen that the employe has the will and finds the way to make his services more valuable.

Railroads are not philantropists. They are in the business to make money. They know a good thing when they see it. The men that work for them should have as good business perception. The companies do not establish pension funds, training schools, club houses and rest rooms for the simple purpose of being generous. They realize that a man will be more contented in their service if he knows that in sickness he will be taken care of, and when he gets too old to work he will not be forgotten. They see that by providing means of instruction for their men that the work is more economically and satisfactorily performed. The company is looking for the best men to fill its higher official positions, and frequently it is no small task to find a suitable person. This may not be realized by the average employe, but it is true. They want educated employes. They provide the means of education. A word to the wise should be sufficient.

No; the men who manage our railroads are not in business for their health. At the same time, we believe they are not wholly selfish. Whatever may have been the shortcomings of the past we believe that a larger spirit of generosity exists toward employes than formerly. If this is true it should be met by a corresponding disposition on the part of the latter. Let us realize that we can not get along without them any better than they can without us. If it is to their advantage that we be educated in our duties, it must be equally advantageous to us to fit ourselves to do a more important work than is now assigned us. If we have ever had the idea that there is a necessary antagonism between us, let us drop it. We are as much interested in the prosperity of the road as any one else. Let us learn to know a good thing when we see it, and when we see it, let us "push it along."

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Rainbow Falls, Ute Pass

Rainbow Falls, Ute Pass, is a point of interest on the Colorado Midland Railway. This picture was sent in by Bro. John Colton, the popular and well known veteran of Lodge 72, B. of L. F., of Camden, N. J., who is at present sojourning in Colorado for his health, and which it is the earnest and sincere hope of his host of friends will be fully restored to him long ere he returns from that invigorating climate.

RAINBOW FALLS, UTE PASS

Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

293. Steam Gauge With Two Pointers.—"We have some locomotives equipped with the Crosby steam gauge, which has two hands or pointers. What is the object of the larger one?"—*C. W.*

Answer.—These gauges have an opening in the dial for the large figures so that the longer pointer may be in a vertical position on the dial and the figures shown through the opening denote the pressure which the boiler is permitted to carry in service, expressed distinctly and without reference to the other figures on the dial. The pressure is always easier determined by the position of the long pointer. The dial also has a circle of small figures denoting the pressures to which the gauge is adjusted, the same as on an ordinary dial. The large and small figures have respectively a large and small index; one is a check upon the other, as each should always indicate the same pressure, and the large figures shown at the top and the long index make it a very desirable feature, especially at night.

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294. Broken-off Check Valve.—"Can a broken-off check valve be repaired and engine brought in under steam? Explain in detail."—*W. S. B.*

Answer.—That depends on the style of check valve used and its position in line with the highest point of crown sheet. With a check valve that had a check inside of the boiler shell, it would be easy, but with the ordinary check, screwed or flanged to boiler, it would be more difficult. However, if you could keep water enough on the crown sheet to fire up with, or fill the boiler from a hose or water supply, or by being towed after plugging the check, or if flanged the check could be removed and a blind gasket inserted between the check and the boiler, you might be able to accomplish results when check valve was broken off an engine. But usually in a case of this kind the engine is damaged to such an extent that it would not always be advisable to consume the time necessary to put her in shape to bring her in under her own steam. If the line is busy, get the engine towed to the shops and have the repairs made without delaying other trains.

295. Proper Register of Steam Gauge.—"How can you tell if the steam gauge is registering properly?"—*W. S. B.*

Answer.—By comparing it with the test gauge or with the pop valve when it opens; also by the working of the engine, the sound of the exhaust and the whistle; the steam escaping from the open gauge cock, or the pressure shown on the air gauge. If the air-pump cylinders are same size, steam and air end, you can not get more air than you had steam, but would get less the amount of friction of piston in air pump and weight of same. If your steam gauge was fast, or indicated more pressure than you had on the boiler, you would notice it by the engine not handling her train properly. If the gauge was slow and did not show as much steam as was being carried on the boiler, and pop valves did not open at the maximum pressure, the engine would be more slippery.

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296. Temperature of Firebox vs. Steam Pressure.—"What is the temperature of the firebox when the steam gauge registers 200 pounds."—*W. S. B.*

Answer.—Steam at 200 pounds is at a temperature of 387.8 degrees Fahr., and if a boiler was allowed 220 pounds of steam the fire could be drawn and the boiler have 200 pounds of steam with a very much lower firebox temperature. Recent tests on a testing plant at St. Louis gave firebox temperature, ranging from 1,427 to 2,112 degrees Fahr. and smokebox temperatures from 561 to 726 degrees Fahr. Firing light and often and closing the door after each shovelful of coal has been placed in the firebox when the engine is working, will maintain a more uniform temperature. Leaving the door open while you put in four or five shovelfuls of coal will reduce the temperature possibly below the above figures. Try and keep the door shut as much as you can; it saves coal and flues.

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297. Position of Saddle Pin.—"Why is the saddle pin placed back of the center of the link, instead of in the center?"—*R. A. F.*

Answer.—This is to equalize the cut-off. Please note that if you place the engine at mid, or half stroke, and use a tram equal to the length of the main rod, or the distance from the center of the crosshead pin to the wheel center, and describe an arc to that radius on wheel and tire, you would find that the tram point would mark the tire forward of a perpendicular line drawn through the center of the axle, and the shorter the main rod the farther away from the perpendicular line the tram point would be, showing that the difference would increase with a short main rod and decrease with a long main rod. Now, if you move the engine from half stroke to forward center and back to half stroke, you would not move half the circumference of the wheel, but only the difference measured on the tire between the two marks made by the tram, and while you move the engine from half stroke to back center and to half stroke again, the engine would move the greater distance than on the first half of the stroke. This is due to the angularity of the main rod. Therefore, it is necessary to locate a position for the saddle pin so that equal portions of steam may be admitted alternately into the cylinder, and the cut-off be equal when the crank pin is at half stroke. This is usually accomplished by locating the point of suspension of the link back of the center, and is for the purpose of securing equality of cut-off and overcoming the angularity of the main rod and the inequality in the motion of the piston at half stroke.

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298. Wide vs. Narrow Firebox.—"How does the wide firebox type of boiler, with wide firebox projecting out each side behind the wheels, differ from the narrow firebox setting between the wheels, and what advantage has the wide firebox over the narrow firebox?"—*J. W. F.*

Answer.—The wide firebox differs from the narrow firebox in height, width and length, necessarily shallow on account of being placed above instead of between the frames, and permits a larger ratio of grate area to heating surface of boiler, with a corresponding decrease in rate of combustion or coal burned per hour per square foot of grate surface, and admits of a larger water space between the inside and outside sheets of the firebox.

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299. Broken Tire or Axle on Four-Wheel Switch Engine.—"How would you block up for a broken tire or axle on a four-wheel switch engine?"—*R. A. F.*

Answer.—If back tire or axle, block it same as for back tire on consolidated, and block on top of driving box of good wheel on disabled side, chaining across to tender frame. If front tire or axle breaks, block up on top of back boxes, raise wheel or axle of broken tire and chain across to car to hold good flange against the rail. If necessary, a car or truck may be used to support front end of engine to get her to the shop.

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300. Indirect Motion Engine.—"With an indirect motion engine, doesn't the back-up eccentric always lead the pin a quarter of a turn less the lap and lead?"—*A. J. D.*

Answer.—With an indirect motion the back motion eccentric leads the pin when the engine is running ahead, and follows the pin when backing up. It is proper to say, with this motion, that either eccentric follows the pin in either direction that the engine is running. (See Fig. 1.)

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301. Direct Motion Engine.—"With a direct motion valve gear, doesn't the go-ahead eccentric lead the main pin about a quarter of a turn?"—*A. J. D.*

Answer.—A direct motion gear, inside admission valve, the eccentrics are set the same as in Fig. 1. Note Fig. 3, which shows the arrangement with the inside admission valve and direct rocker.

Fig. 5 shows the position of eccentrics if an outside admission valve were used with a direct rocker.

Fig. 7 brings you back to the starting point, only with a piston instead of a slide valve.

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302. Broken Axle or Back Tire on Consolidated Engine.—"How would you block up for a broken axle or back tire on a consolidated engine?"—*R. A. F.*

Answer.—When the back driving axle breaks, if no other damage is done, remove both sections of side rods, jack the broken end of the journal up level and secure it by blocking between the bottom of the box and pedestal brace. If the firebox extends over the frame and the springs are between the pedestal jaws and under the top frame rail, pry up the back end of the spring as high as possible and block it there. Disconnect the front end of back equalizer if necessary to do so. If the springs and equalizers are above the frame, the block should be placed between the top of the frame and the spring saddle. The object in either case is to relieve the box of the weight it carries. If the second and third drivers have blind tires, chain around the tailpiece of the

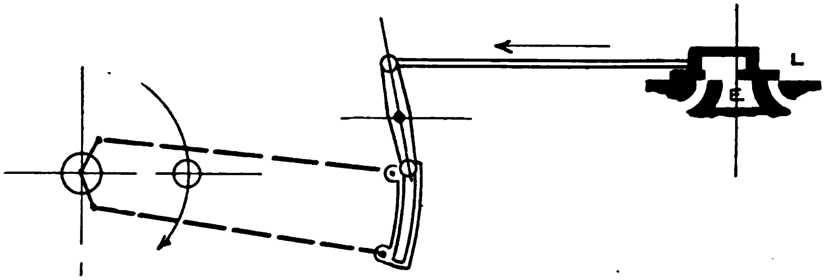

Fig. 1

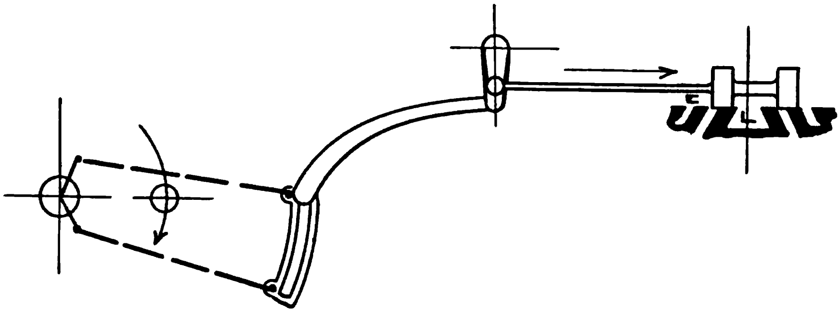

Fig. 3

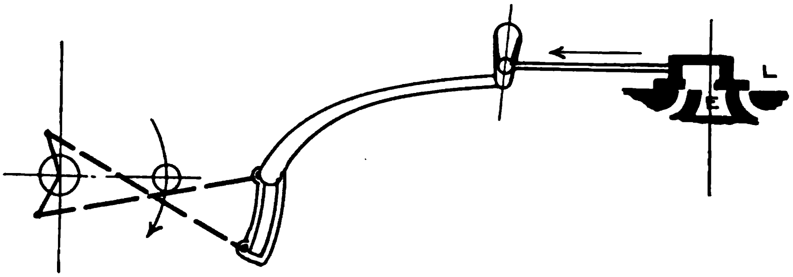

Fig. 5

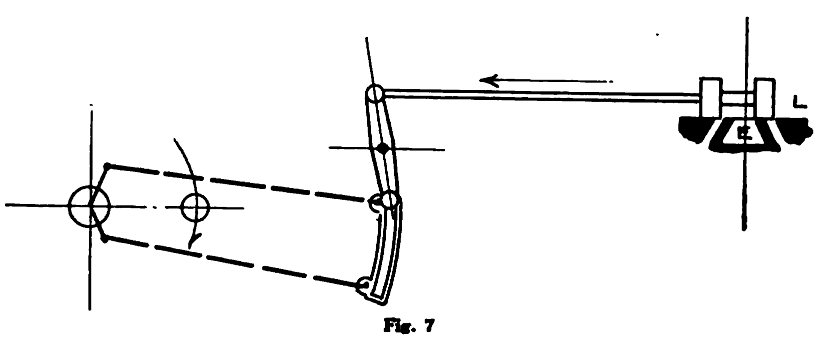

Fig. 7

Direct and Indirect Valve Motion

engine frame on the disabled side and across to the opposite side to front corner of tender frame, using wedges to hold it as tight as possible, and this will crowd engine over against flanged driver. Cut out the driver brake, run carefully, especially around curves and through frogs and switches. With a broken tire, handle in the same manner, with the exception of taking down back sections of siderods, which may be left up if they are not damaged to warrant their removal.

303. Friction of Valve and Slip of Link.—"Why is it that when an engine is working hard the lever pulls toward the corner of the quadrant for three exhausts and towards the center with one exhaust? I have noticed on any engine that I have been on that there is one exhaust which, if you catch just right, the lever hooks up easily, and the other three you can hardly pull the lever back. We have three 20x26-inch cylinder engines that are almost impossible to hook up unless you get them just right. We do not have piston valves, but I understand they are not affected that way. Will you please explain?"—*A. B.*

Answer.—The reason that the lever pulls forward for three exhausts and back on one exhaust is due to the friction of the valve and the slip of the link on the link block. The valve moving hard over its seat at slow speed and a well opened throttle causes increased friction between the link and the link block. If the pull on the lever was constant in the forward direction the lever would not rattle when the valves got dry. As it is, the pull is forward while making three-quarters of a revolution, or for three exhausts, and backward for one exhaust. Get out on the running board and note that the tumbling shaft arms lift up when left side is passing back center running ahead, and pulling forward while passing top quarter forward center and bottom quarter left side. Tightening up or placing more tension on the counterbalance spring and more efficient lubrication on valves will partially overcome this trouble. The reason that this is not as noticeable on piston-valve engines is due to the fact that a piston valve is more perfecfly balanced than a slide valve.

304. Lubricator Siphons Into Boiler.—"How does oil from a lubricator siphon into a boiler when a boiler is allowed to cool and the lubricator throttle is not shut off? What is cause?"—*J. S.*

Answer.—When a boiler is in service it contains water and steam at a temperature in proportion to the pressure. The steam and water occupy space. When allowed to cool the steam is condensed, and the water, losing its heat, also occupies less space. When this occurs a vacuum is formed in the boiler. Atmospheric pressure surrounding the boiler trying to get in and destroy the vacuum is the cause of the oil siphoning out of the lubricator, and this occurs only when the lubricator is not perfectly tight in all joints. A very slight leak at filling plug, around the gaskets of the oil glass, or packing nut on the feed valve, will admit air enough to destroy the vacuum and allow atmospheric pressure on top of the oil in the cup. The vacuum in the boiler will tend to draw the oil up through the steam pipe above water valve when it is open, and as this passage or pipe extends nearly to the bottom of the oil cup it affords an easy passage for the oil to siphon into the boiler. If the oil cup was absolutely airtight oil would not siphon out. This is why it only takes place occasionally on certain engines when the lubricators are not absolutely tight.

305. Tractive Force or Drawbar Pull.—"Give a formula for figuring the tractive force or drawbar pull of any class of engine?" —*R. A. F.*

Answer.—The tractive power or drawbar pull of a locomotive at slow speed may be ascertained by assuming that 85 per cent. of the boiler pressure will equal the cylinder pressure, or, as it is termed, M. E. P. (mean effective pressure), and, using the formula $\frac{C^2 \times S \times P}{D} = T$, C^2 means that the diameter of the cylinder should be multiplied by itself, or squared. S represents the stroke of the piston in inches, and P the mean effective pressure in pounds per square inch in the cylinder, which is usually figured at 85 per cent. of the boiler pressure. D equals the diameter of the driving wheel in inches, and placed under the line means that when the diameter of the cylinder is multiplied by itself, or squared, then multiplied by the number of inches of the stroke of piston, and then by the number of pounds mean effective pressure in the cylinder, and divided by D, or the diameter of the driving wheel in inches, will give the T = tractive power or drawbar pull of the engine, and is worked out in the following manner:

Example: A locomotive with 20x26-inch cylinders; diameter of driving wheel, 56 inches; boiler pressure, 200 pounds.

$$\begin{array}{lr} C^2 = & 20 \times 20 \\ & 20 \\ \hline & 400 \\ S = & 26 \\ \hline & 2400 \\ & 800 \\ \hline & 10400 \end{array}$$

85% of boiler pressure = P.

$$\begin{array}{r} 200 \\ .85 \\ \hline 1000 \\ 1600 \\ \hline 170\ 00 \end{array}$$

Now we have a pressure of 170 pounds for P.

$$\begin{array}{r} 10400 \\ 170 \\ \hline 728000 \\ 10400 \\ \hline \end{array}$$

Diam. of driver $56)1768000(31571$

$$\begin{array}{r} 168 \\ \hline 88 \\ 56 \\ \hline 320 \\ 280 \\ \hline 400 \\ 392 \\ \hline 80 \\ 56 \\ \hline 4 \end{array}$$

Tractive force or drawbar pull = 31,571 pounds.

For a two-cylinder compound take two-thirds of the boiler pressure and consider the high pressure cylinder only. Use this formula:

$$\frac{C^2 \times S \times \frac{2}{3}P}{D} = T.$$

For a four-cylinder compound use this formula:

$$\underset{\text{High pressure cylinders.}}{\frac{C^2 \times S \times \frac{2}{3}P}{D}} + \underset{\text{Low pressure cylinders.}}{\frac{C^2 \times S \times \frac{1}{4}P}{D}} = T, \text{ or}$$

drawbar pull.

Work out for high and low pressure cylinders the same as you did for the simple engine and add the quotients.

306. Inside or Outside Admission Valve.—"How can you tell by looking at a piston valve engine whether it is inside or outside admission?"—*A. J. D.*

Answer.—By the position of the rocker arm. For instance, if you had a piston valve engine on forward center, with the lever either in forward or full backward motion, if it was inside admission the valve and rod would have to move forward to open the front steam port, and if it was outside admission the valve would have to move back to open the port to admit steam to the cylinder. After you have given this a few minutes' study a glance will enable you to determine which is the inside and outside admission valves.

307. Headlight Oil in Lubricator.—"B claims that by putting headlight oil in the lubricator it benefits the lubrication of the valves. A can not see in what way it does, and B says that the engine handles better when the valve oil is mixed with a certain per cent. of headlight oil and fed through the lubricator."—*C. J. W.*

Answer.—Valve oil will stand a temperature of about 650 degrees of heat, headlight oil only about 300 degrees before burning. Therefore, the kerosene oil should not be mixed with valve oil and used for lubricating valves or cylinders, as it may burn and cause the strips and rings to gum. Mixing valve oil with kerosene reduces the consistency of the valve oil, and it is not advisable to use it for valves and cylinders.

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The Westinghouse Air Brake.

Answers by F. B. Farmer.

231. Brake Valve Position Inquiry.—"In reading the questions and answers on air brakes in the June Magazine, I noticed that the answer to Question 227, page 833, contradicts the answer to Question 80, page 816. I would like to know which of these statements is correct."—*R. H. M.*

Answer.—The answer to Question 80, on page 816, evidently refers to a brake valve in running or release positions. The other one mentioned relates to a brake valve on lap. So it will be seen they do not conflict. In running or release positions the air can pass from the train pipe to the main reservoir, and not necessarily raise the rotary valve from its seat, though the train-pipe pressure must raise rather gradually to avoid it. A rapid and considerable rise will not only unseat the rotary valve, but will also lift the equalizing piston and waste air at the service exhaust.

232. Leaving Train Brakes Set on Grade.—"In the July issue of another magazine I noticed an answer to a question that does not seem right to me in one particular.

The question says that in working on a grade where brakes have to be used to hold a train, once in a while a train gets started because a brakeman forgets to open an angle cock after a stop for water or to leave a car, and asks what can be done to prevent this. Several ways are given, and all seem good to me except one that says to leave the air set. Our instructor says to always leave the air brakes released when cutting off on a grade, and that even where the engine stays on the train the air brakes should be released and recharged, and the train held with hand brakes, if the stop exceeds ten minutes. The reason is that air brakes are liable to leak off, and unless there are enough hand brakes set, which we can't tell with air brakes on, there is liable to be a runaway. Please advise about this."—*A. D. T.*

Answer.—Your instructor has told you right, and the reasons you give show the need of always observing this rule. In the writer's rather short experience as an engineer on steep grades, a few serious wrecks that were the result of not following this rule occurred on the division he was on. Since then he has noted many more that were due to the same cause. Another reason for this good rule is that when the air brakes are released after standing for some time, the pressure is always low. It is not safe to start until the train is fully recharged, and this can only be insured by strict observance of the instructions, or, as it should be, the rule in question.

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233. Rotary Valve on Lap and Train-Pipe Leakage.—"In placing brake valve on lap, the rotary valve covers all ports. The equalizing reservoir pressure is a separate pressure by itself, and can escape only by service applications. As in testing for a train-pipe leak, place the valve on lap, then make a leak by opening the angle cock on the rear of the tender. The black hand on the air gauge will go right down to zero. I can not find any port by which the equalizing reservoir pressure, which is that over the equalizing piston, and what the black hand is connected to, can escape, or find any one that does. We know that the hand goes down with the train-pipe pressure, but how does the air get out of the equalizing reservoir? The only place that we can find or have any idea of is that the leakage is by the equalizing piston packing ring *18*. The only way that I can figure it is that there is a connecting port somewhere, as all brake valves work alike. I would like to have this explained in the columns of the Magazine."—*C. A. W.*

Answer.—Your assumption that it leaks past the equalizing piston packing ring is the correct one. A single packing ring can not make a perfectly airtight joint for any length of time, and especially where it is subjected to as much dirt and usage as is the case with the ring in question. Owing to this fact and the small volume of the equalizing reservoir, train-pipe leakage is invariably indicated, as you have noted.

In speaking of this it may be well to add that the ring is not expected to make an airtight joint when a service application is being made with a long train, although such a joint is necessary for the best results. With a train of over seven or eight cars the piston strikes the projecting leather gasket and a sharp flange on top, near the outside of the piston makes an airtight joint in the leather. A failure to do so will cause the black hand to raise after return to lap, but which will not occur with the light engine. This usually indicates the need of a new leather gasket.

When the ring, through wear, gradually gets so leaky as to interfere with proper operation it will be noticed by the piston occasionally failing to close entirely, especially if dry and dirty, after a service application with a long train. But this action should not be confused with the same result after more than enough has been drawn from the train pipe to fully apply all brakes. Any blow then is proper, and is due to auxiliary and brake cylinder pressures leaking through the triples into the train pipe.

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The New York Air Brake.

Answers by J. P. Kelly.

146. Trains Having Ten-Inch Equipment Breaking in Two.—"When handling trains consisting of forty-five cars, or more, all air, we experience considerable trouble on account of the train breaking in two or more places, when releasing brakes at ordinary speeds. This happens often when cars having 10-inch equipment brake cylinders are in the rear of the train.

"Please explain why the 10-inch brakes cause this trouble. What remedy would you suggest to overcome it?"—*W. T. D.*

Answer.—Releasing the air brakes on long "all-air" trains at slow speeds is an operation likely to result unsatisfactorily, no matter what size brake cylinders the cars may be equipped with, because it is practically impossible to effect a uniform release of all brakes throughout the whole train; and unless the release is fairly uniform throughout, the rear brakes, on account of their releasing last, will jerk the front part more or less. The rear brakes are the ones always most likely to release last, because they are further from the brake valve than those on the forward portion of the train, and do not feel the effect of the incoming main reservoir air for some little time after the handle is placed in release position.

Any jerking, therefore, they may give to the front portion of the train, on which brakes are already released, with the slack in all probability running out away from the rear, is most efficacious in snapping off the coupler knuckle, or pulling out the whole draft gear, thus breaking the train in two. This result can be had on long trains under the condition of brake release cited above, whether all the cars are equipped with 10-inch brake cylinders, all with 8-inch, or, if there is a mixture of both, as in this case. But it is, no doubt, more likely to be had if a few 10-inch equipments are in the rear of the train than if all of the cars had 8-inch equipments, and this is because the cars with the 10-inch equipments have, as a rule, a lower total leverage than the cars having 8-inch cylinders, their piston travel is hardly ever excessive, and their brakes, as a rule, hold better than the others. Consequently, when they are in the rear of a long train, and a release of the brake is attempted, without some provision being first made to hold the slack bunched, a break-in-two is almost sure to follow.

But the 10-inch equipment should not be held responsible for this, but rather the condition of the other brakes in the train, and the method of handling them.

The application of the 10-inch brake cylinder to freight equipments means that to prevent damage greater care will now be necessary than was formerly in the handling of the air brake on long trains.

The remedy for break-in-twos on long trains during release is: Unless you have some efficient means of holding the slack in long trains bunched, until you can properly release all brakes, *don't release* at slow speeds. Let the train stop, then release.

To let the train stop, however, before releasing brakes consumes time, and, to permit of release at slow speeds and save this time with certainty the railroads are equipping the locomotives with the combined automatic and straight-air brake and other devices, such as driver-brake retaining valves and driver-brake exhaust stop cocks piped into the triple-valve exhaust port. These are brought up into the cab so that the engineer can manipulate them easily, and are intended to prevent the release of the driver brakes and thus hold the slack of the train bunched while the automatic brakes are being released. In the case of the combined automatic and straight-air brake, the tender brake is also held applied.

The main reservoir should be amply large to hold plenty of air to charge up the brake pipe quickly; but whether it is or not, when releasing, leave the handle in release position until the pump has accumulated standard brake-pipe pressure again.

When applying the brakes in service on long trains, sufficient time should be allowed, after the brakes are first lightly applied, for the train to bunch or stretch (adjust itself), whichever it will do, before the increased reduction in brake-pipe pressure is made. Otherwise with a few 10-inch cylinders at the rear of a long train, the train might break in two during the application of the brake.

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147. Slowness of the Straight Air Brake.—"When using the New York straight-air brake in quick, rapid switching, or when spotting cars, it does not seem to take hold so quick as it should. Hadn't it ought to apply the brakes quicker than it does?"—*W. H. T.*

Answer.—With the heavy and careless use of the straight-air brake considerable damage can be done to cars and lading, and this damage would be much greater if the brake cylinders could be filled to full allowable pressure almost instantaneously every time the brake is applied.

It is to prevent the possible damage that might occur through the careless use of the straight-air brake that the air passage through the pressure reducing valve is not made larger, but is of such size as to cause the slower action of the brake.

The brake is a little too slow when spotting cars, if handled in the ordinary way; but if handled according to the following, no difficulty will be experienced in getting a quick application:

1. Remember that it requires a certain air pressure in the brake cylinders to get the pistons out far enough to bring the shoes up to the wheels before the brakes begin to take hold at all. In cases where the piston travel is longer than it should be, and where quick stops are required, as in spotting cars, don't let all the air out of the brake cylinders when releasing, but retain sufficient pressure to hold the piston out as far as possible without causing the shoes to rub hard on the tire. Then when you want to stop you will

find that the straight-air brake takes hold promptly.

2. Keep the travel of the driver-brake piston within the recommended limit: that is, don't allow it to exceed 4 inches. When piston travel is properly maintained it will not require so much air to fill the brake cylinders, hence the full brake application can be made quicker.

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Train Rules and Train Practice.

Answers by H. A. Dalby.

168. In Yard Limits.—"During foggy, smoky or stormy weather, how must a train occupying main track inside yard limit boards be governed?"—*W. X.*

Answer.—As a general statement, it may be said that the rules for the protection of a train are the same in good weather and bad, with the exception that extra precaution is required when conditions are such that signals can not be clearly seen. On the road from which the question came Rule 99(a) permits engines to work and trains to stand on the main track in yard limits on the time of all except first-class trains, but must not delay passing trains when they approach. This would indicate that no protection is necessary. Another clause of the same rule says that if the yard is protected by yard limit signals, these signals must indicate "stop" whenever the main track in the yard is occupied. Our understanding is that yard limit signals are semaphores, capable of indicating "stop" and "proceed." They stand at "stop" at all times except when cleared to allow a train to pass through the yard on the main track.

Rule 98(a) directs an approaching train, finding the yard limit signal against it, to come to a stop and sound one long blast of the whistle, after which it may proceed carefully, sending a flagman ahead if by reason of weather conditions or curvature of the track the view is obstructed.

Good judgment would dictate, even if the rules did not specifically require, that a train within yard limits use more than ordinary diligence to avoid collision in foggy weather, even to sending out a flagman, if there were a possibility of a train passing the yard limit signal without knowing it.

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169. Form B.—"If an order is issued, 'Extra 217 will pass No. 1 at B,' and when No. 1 is ready to leave B the extra has not arrived, has No. 1 a right to proceed?"—*S. Y.*

Answer.—According to the strict meaning of the order, the extra *must* pass No. 1 at B and run ahead of it to the district terminal. On some roads more or less freedom is allowed conductors and engineers, depending on the importance of the trains concerned. If the extra were known to be a passenger train and No. 1 were a freight, it would be advisable to stick to the instructions contained in the order. If, on the other hand, the extra were a freight and No. 1 either a passenger or freight, and the dispatcher could not be communicated with, it is probable that no one would find fault with No. 1 if it went ahead of the extra.

The matter of one train running ahead of another, especially if the trains are of about the same importance, can, as a rule, be determined only by knowing exactly what time each will be ready to leave a given point. As this knowledge is so uncertain it requires a train order that is very flexible in its provisions in order to keep the trains moving with as little delay as possible to each. For this reason it is our opinion that the order quoted is too positive in its terms. It should not be used unless it is intended that the extra shall positively go ahead of No. 1 from B. If the dispatcher does not intend this positive action to apply he should use the more permissive order authorized in example 2 under Form B: "Extra 217 will pass No. 1 when overtaken."

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170. More About Form B.—"The following is found under Form B: 'A train receiving an order that another train will pass it or run ahead of it, must not exceed the speed of the other train between the points designated, and must keep a sharp lookout for it.' How will you determine the speed of the train ahead?"—*O. Z.*

Answer.—This is a matter that rests wholly on the judgment of the engineer of the following train. The intention of the rule is to caution the following train against running at such speed that it will be likely to overtake the other or get so close to it that a flagman could not get back a sufficient distance in case the leading train were unexpectedly stopped. With regard to the speed of the leading train no engineman can tell exactly the speed of any train except his own, but if he knows the character and size of the train ahead he can form an idea of about how fast it can run, and govern his own speed in a way that he may reasonably expect will avoid a rear collision.

In cases of this kind we consider that the dispatcher can materially aid by advising the following train as to the character and weight of the leading train, also its position, i. e., what time it passed certain stations. With this information the engineman of the following train can handle his train in a way that will fully accomplish the purpose of the rule.

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171. Time-Table Change.—"Please explain how the rights of a train of the old time-table are determined when a new time-table takes effect."—*T. X.*

Answer.—The questioner here touches upon a weighty subject, one that is difficult to answer in a limited space, and one that has involved almost endless argument. We shall answer as clearly as space will permit.

The Standard Code sanctions two ways for the government of a train which is on the road or due to be on the road when there is a change of time-table. According to the first recommendation everything dies with the old time-table, and there are then no regular trains due anywhere on the division or district until they become due to leave their initial stations. This is the simplest way and the one most easily understood, but it makes a great deal of work for a dispatcher on a busy district, inasmuch as all regular trains on the road must be run extra from the point where the change overtakes them to the terminal station. This form is not largely used.

By far the most common procedure is indicated by the second form of Rule 4, known in the Standard Code as Rule 4(B). It is in use without alteration on almost every road. It is founded on the principle of a train on the road assuming the schedule of the corresponding number on the new time-table and proceeding to its terminal. The principle is good, but without some further qualification it often leaves us in the dark as to what schedules are or are not in effect after a change. If the old and new schedules are the same, or nearly so, it will usually work all right, but when they differ it often happens that the rule does not make sufficient provision, and it is sometimes possible for two trains to get on the same schedule and still comply with the rule. The Canadian Pacific has modified the rule so that it reads as follows:

"Each time-table, from the moment it takes effect, supersedes the preceding time-table. A train of the preceding time-table must retain its train orders, and take the schedule of the train of the same number on the new time-table, unless that train is due, on the new time-table, to start from its initial point on that section or branch within twelve hours from the moment the new time-table takes effect, in which case the train of the preceding time-table loses all its rights at the moment the new time-table takes effect and can thereafter proceed only by train order."

This would overcome some difficult situations, but not all; and the fact remains that there has never yet (so far as we know) been a rule constructed with this principle as a basis that will tell us in every possible situation what to do.

A little more light has been shed on the question by making it understood that in assuming a schedule on the new time-table the train must keep the same date it had when it started, i. e., it must assume the schedule of the same date as the one on which it was running before the change. This helps over a good many hard places, but it does not make a perfectly automatic rule, which is the desired end.

The experience of the boys on the High Line was recorded in the Magazine of April, May and June, for the purpose of showing what difficulties they met and how they were overcome. Their story expresses what may be said on the subject in greater detail than is possible here.

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172. Changing a Meeting Point.—"The following order was issued: 'Engine 21 will run extra A to E, and will meet extra 23 south at B, extra 25 south at C, and extra 28 south on double track.' Next order reads: 'Extra 21 north will meet extra 23 south at B, and extras 25 and 28 south at C.' We have double track D to E. South bound trains have right of track over trains of the same or inferior class. Should second order read: 'Extra 21 north will meet extra 23 south at B, and extras 25 and 28 south at C, instead of double track?' Is the word 'instead' necessary?"—*P. M. S.*

Answer.—Unless your rules are different from the Standard Code the matter of south bound trains having right over trains of the same or inferior class does not enter into this case. Right by direction only applies to regular trains, not to extras. As the second order changes only the meeting point with extra 28, it should have read, "Extra 21 north will meet extra 28 south at C instead of on double track."

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173. A Matter of Caution.—"Order No. 1 reads: 'Engine 21 will run extra A to D, and will meet extra 23 south at D.' On arrival at D we receive another order: 'Engine 21 will run extra D to E.' Extra 23 south has not arrived. What is the proper course to pursue in the absence of special ruling?"—*P. M. S.*

Answer.—There is nothing that requires extra 21 to wait at D for extra 23 south, but the mention of it in the order is an indication that there is such an extra on the road, and as a matter of caution and safety the crew of extra 21 should ask about it and be sure that they are right before proceeding. We believe this course would be right unless the proper officer of the road should rule otherwise.

Unless there is a definite ruling in regard to such an order it should never be sent. It does not mean anything, for it tells extra 21 to meet a train after it has fulfilled its running orders and is not concerned in any meeting points at all. All it does is to create a doubt in the minds of those on extra 21, so that they do not know what to do.

Presumably the order is issued for the benefit of extra 23 south, and if that is the case it should read, "Engine 21 will run extra A to D, and has right over extra 23 south."

Conductors and enginemen should refer such orders to the trainmaster or superintendent, and if they sanction their use they should explain how they wish them to be understood.

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GRAND STAIRWAY, SHOWING EUROPEAN AND ORIENTAL EXHIBITS BUILDINGS, LEWIS AND CLARK EXPOSITION, PORTLAND, OREGON

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Railway Club Proceedings

*Points to be Observed by Enginemen While in Service in Order to Successfully Meet Modern Methods of Freight and Passenger Train Operation.**

When first requested to prepare a paper upon this topic to be read at this meeting, the writer was somewhat at a loss to know how best to handle so broad a subject in order to avoid embodying what may appear to some to be superfluous matter, and at the same time not sacrifice the opportunity to refer to points which others, as well as the writer, believe to be of the utmost importance.

After considerable thought, it was recalled that nearly all railway companies have a number of engineers in their employ who appear to be in a class by themselves. They are usually men of excellent character, broad-minded, and always alert to advance their company's interest; in fact, their work is of a most satisfactory nature, highly appreciated and frequently commented on by their associates and immediate officials. It is true that most firemen who are fortunate enough to be associated with these same men also make splendid engineers, and it is to be regretted that more firemen do not have opportunity to receive daily instruction and advice from such competent men.

The author, in the performance of his duties as road foreman of engines, comes in contact daily with engineers of the type just referred to, both at terminals and while on the road. And, having this unusual opportunity to frequently observe their methods while in action, feels that what will most please the members in the arrangement of this paper is a review of the methods employed by those running locomotives and who are known to be successful engineers.

The successful engineer, it is pleasing to note, appreciates the requirements the moment he is called for service. He is anxious to reach the roundhouse, or station, as quickly as possible after being called, provided he is not assigned to a regular run, evidently realizing the importance of devoting as much time as circumstances will permit to a careful inspection of the locomotive he is to handle. Instead of finding fault with the roundhouse foreman, engine dispatcher and roundhouse men in general, for any defects discovered, we find him calling the attention of those in charge to such matters in a cheerful, yet businesslike way. His manner of doing so commands respect and roundhouse men without exception appear to be anxious to do his bidding.

The fireman, this engineer observes at a glance, is either experienced or a raw recruit; a few remarks are interchanged, and the engineer's keen perception of the status of affairs tells him how far the fireman is experienced. He drops a cheerful word here and there, his orders are given more in the way of suggestions than commands, and the fireboy instantly has confidence in himself. The fireman observes his efforts to help him along, notes his watchfulness and care of the engine, all of which has a very desirable effect and his engineer then and there becomes his ideal.

Although the engineer of today is only an engine runner, and his duty is to run any kind of a locomotive he is called to handle, the successful one is really interested in the condition of each and every engine he runs to the extent that he feels all others of his craft as competent as himself. With that in view, he appreciates the fact that any neglect on his part will bring criticism not only from his superiors, but from the next engineer to handle the engine he has just left. Our ideal engineer does not feel that all that is required of him is to take a train over the division and note any defect he may find when he gets in. He is careful to state intelligently what is defective, so that the roundhouse man may know where to look for trouble. Instead of reporting on the form provided, "engine does not steam, right injector does not work," and many other defects which could be remedied with little difficulty if correctly reported, he shows as plainly as possible wherein the injector is defective, or the cause of engine not steaming; at least, he gives his best opinion of the cause, and if all engineers did likewise very few would be able to find fault because the work reported was not done.

The successful engineer is economical, just as you will find him in his private affairs. He does not permit waste of fuel or oil, and works his engine to the best advantage in order to give as good mileage to the cost of fuel and lubrication as he can. He is equally as watchful of the fireman's work, so that a proper fire is maintained at all times, and he realizes, too, when there is sufficient steam pressure to handle the train properly and how to prevent waste of steam.

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*Paper by W. J. Hurley, read at the meeting of the Central Railway Club, May, 1905.

To handle trains as they should be under existing conditions, the really successful engineer has long since realized that among other things he must have a good idea of the proper operation and care of air brakes. He is not satisfied with the knowledge possessed by some of his associates, which, briefly stated, is simply an understanding that when brake valve handle is moved to application position, the brakes apply, and when handle is placed in release position the brakes release.

Experience has taught him that what the heart is to the human body, so is the air pump to the air-brake system, and on account of its importance is entitled to the greatest consideration. If we watch this man starting his pump, just before leaving the engine house, we observe that it is allowed to run slowly until the water in steam cylinder is worked out through the drip cocks and some pressure accumulated—20 or 30 pounds. It will also be noticed that after the air cylinder is warmed up slightly, it will be oiled through oil cup attached to centerpiece, and at the proper time oil will also be started in the steam cylinder. Valve oil will be used in air cylinder and admitted as follows: Oil cup having been blown out on the up stroke, is now filled with cylinder oil, and as piston descends cup is quickly opened, which action allows oil to be drawn into cylinder, but cup is again closed before piston returns on the up stroke.

If we continue to watch this man's movements, the chances are we will find him, before leaving engine house, making a test to determine the condition of the air end of his pump, which will be made thus: With 90 pounds main reservoir pressure accumulated, pump is slowed down to 30 strokes (exhausts) a minute. Oil cup is then opened, and if air blows out of cup on downward movement of piston for more than one-fourth of its stroke, the pump is in bad condition, and should be condemned. Such a condition shows plainly that either the air piston packing rings, air valves, or air valve cages are leaking. If the blow continues through oil cup when pump is stopped, leaky discharge valve or cages is the cause. If the blow stops after pump is stopped, leaky air piston packing rings is responsible for the trouble. No blow should occur at oil cup of a pump just repaired, while piston is making down stroke.

He will next examine the air gauge to determine if pump governor and feed valve attachment are properly controlling main reservoir and train-pipe pressure. This will be followed by an examination of the various other parts on engine belonging to the air-brake system, particularly the driver brake and tender brake, for it is known that with the modern engine a good driver and tender brake is equal to the brakes on about six cars, the light weight of which is 30,000 pounds.

Before leaving the engine house the train pipe under tender will be blown out through angle cock at rear, to make sure that no water is deposited in the pipe.

When coupling engine to train, we also get considerable benefit from his superior knowledge of brake matters. It will be noted that as soon as coupling is made, the train will be stretched in order to enable trainmen and inspectors to find all leaks more readily; meanwhile the maximum main reservoir pressure is allowed to accumulate. If the engine is equipped with duplex main reservoir control, the brake valve handle is placed on lap position in order to obtain the highest possible main reservoir pressure. Air is then turned into train pipe under cars and air pump throttle regulated to prevent too high pump speed. Good results are obtained by running pumps at a speed of about 140 strokes a minute, since if the train can not be charged with pump running at this speed, it will be clear, assuming that the pump is in reasonably good condition, that too much train-pipe leakage exists. Brakes are tested later, not, however, until 65 or 70 train-pipe and auxiliary pressure is obtained. With high speed brake train, brakes should not be tested with less than 105 pounds train-pipe and auxiliary pressure. Test is made by moving brake valve handle to service application position and holding it there until black hand on air gauge has fallen about five pounds, when handle is returned to lap position. Special attention is now given to train-pipe exhaust from brake valve which immediately follows this movement both with reference to length and manner in which exhaust stops. He then makes 10 pounds more reduction at brake valve and again returns brake valve handle to lap position where it will be allowed to remain until a signal is received from inspectors to release brakes. This engineer understands that the train-pipe exhaust should stop gradually, but if on second reduction, he is suspicious that there was a more abrupt closing of the train-pipe exhaust than should be, he will immediately be seen making a further reduction of five or six pounds and noting if exhaust from angle fitting occurs. If no discharge takes place, he is then satisfied that train-pipe exhaust did close off too quickly as originally suspected, and which is evidence that train brakes applied in quick action instead of gradually as intended, and he at once notifies the inspectors of the fact that they may try to locate the defective triple valve causing the trouble. The engineer can be of considerable assistance to inspectors in locating a defective triple (kicker) if he will only do the right thing at the right time. His part in the matter is simple and requires that he do only two things. First, be sure before making test that he has full train-pipe and auxiliary pressure—70 pounds if using low-pressure brake and 110 pounds when operating under high-pressure brake. Second, he must not make over a four or five pound reduction the first time while applying the brakes for inspectors to look train over. When an inspector finds a suspicious looking car, he will signal the engineer to reduce more pressure and upon receiving this signal he follows up with another 10-pound reduction, and if brakes apply in quick action, it will again be indicated by the sudden closing of the train-pipe exhaust. This trouble could be caused by either a defective triple, a defective engineer's brake valve or a combination of both. At any rate, the trained engineer will not start the train until every known means has been exhausted to locate the trouble, for he believes and justly so, that it is much easier to correct such trouble in the yards and depots where men and tools are available, than out upon the road where there are no facilities, and particularly after a train has been broken in two by an erratic action of brakes.

In starting out with either a freight or passenger train, the expert engineer does so with the feeling that safety must be the first consideration, and while his ability to stop the train will be influenced to a very large extent by condition of rails, brakes and grade, yet generally speaking, this will vary directly with the square of the speed. For example, all else being equal, if the train can be stopped in 100 feet with an emergency application from a speed of 10 miles an hour, the same train could not be stopped short of 900 feet from a speed of 30 miles an hour; or, in other words, the distance required to stop would be nine times as long. In view of this, all dangerous places are approached at only such speeds as the condition of train brakes would seem to allow. Along this same line the following points we find are thoroughly understood and given due consideration on handling trains on grades.

"On a level grade the entire holding power is available for stopping.

"On a descending grade a certain portion of the holding power is required to prevent a gain in speed.

"On a descending grade the work required of each brake to prevent a gain in speed increases with the weight of the load per good brake.

"The holding power available for stopping on a grade is that in excess of what is necessary to prevent a gain in speed.

"The holding power obtained from a certain shoe pressure always decreases as the speed increases.

"The longer the distance, and consequently time, required for a stop, the more will it be lengthened by brake cylinder leakage."

While riding over the road, with these different men, close observation will bring out the fact that the most modern air-brake instruction is being followed. Hereinafter are a few of the things that will be noted.

A close watch is kept on the air gauge, to provide against a stopped air pump being unnoticed.

That emergency applications of brakes are avoided except when necessary to prevent accident.

That when handling freight trains a little time is allowed between the shutting off of engine throttle and first application of brakes, in order to allow slack to run in if it will.

In every case when applying brakes on freight trains the first reduction is never less than five pounds—with 40 cars or over, not less than seven pounds.

Freight trains are always stopped with one application of the brakes except when engines are fitted with straight-air brakes.

Light brake applications with long freight trains are avoided as much as possible, for the reason that it is more difficult to release brakes (start triple to release) after a five-pound reduction from standard pressure than if a 15 or 20-pound reduction were made. Light automatic brake applications from maximum pressure are objectionable also, on the ground that some of the head auxiliaries are apt to be overcharged at time of release. In case a five-pound reduction is sufficient to stop train while moving slowly, it is usually followed up with another five or six-pound reduction after train has been stopped, or, in other words, an effort is made to make at least a total reduction of 10 pounds before attempting to release brakes which action assists as above stated in the release of brakes.

Where engine is equipped with straight air brake all light braking is done with it, providing it is not necessary to hold brakes applied too long.

That when releasing brakes after a 10-pound reduction on long freight trains, say of 75 cars, engine having main reservoir capacity of 50,000 cubic inches and between 90 and 100 pounds main reservoir pressure, brake valve handle is moved quickly to full release position and held there for about 15 seconds after which handle is returned to running position. It is very often necessary about 15 seconds after to again move handle to full release position to kick off some of the head brakes which released with the others but on account of auxiliaries being slightly overcharged reapplied.

When handling long freight trains, engine throttle should not be opened for at least 35 seconds after brake valve handle has been placed in release position and then be opened very carefully.

A running test is made with passenger trains immediately after leaving a station or place where engine or make-up of train was changed. This test is also made when approaching drawbridges, railway crossings, meeting points and the like and is done without shutting off. The test consists of simply noting length of train pipe exhaust and that the brakes take hold.

When possible a running test is also made with freight trains at points such as referred to above, but of course engine throttle must first be closed and not opened again until assurance is had that all brakes are released.

Under no circumstances with either freight or passenger train is brake valve handle placed in full release position while air is discharging from angle fitting of engineer's brake valve. If this is done it is one of the surest ways of breaking trains in two, especially at slow speeds.

Passenger trains are stopped at all stations with two applications of the brake.

With passenger trains of ten cars or more second application of the brakes is held on until after train stops.

Where it is necessary to run passenger trains around curves on level track at a high rate of speed, brakes are applied just before striking the curve. This prevents cars from rolling to a considerable extent and in many cases is done without shutting engine off.

Automatic brakes are not depended upon to hold trains standing on grades for any length of time. In such cases air brakes are released and hand brakes applied. If engine is equipped with straight air brake, very often it is sufficient to hold train.

Where emergency applications of the brakes are necessary, engine should never be reversed.

The practice of kicking off some brakes in the train and allowing others to remain applied is never followed. When it is necessary to release any brakes, great care is taken to insure the release of all brakes in train, this to prevent shock and possibility of train separation, also wheel sliding.

When the use of sand, in connection with brake application, is necessary, it is allowed to continue running until stop is made.

That when stopping or slowing down fast passenger trains, the first reduction is from 10 to 12 pounds at all times when speed exceeds 30 miles an hour.

Under no circumstances with freight trains are brakes released after an emergency application until train has come to a dead stop. This is also practiced with long passenger trains, when emergency action occurs while moving at slow speeds.

When releasing brakes on long passenger trains, assuming proper precaution was taken in applying same and sufficient main reservoir pressure available, the brake valve handle is allowed to remain in full release position for about five seconds before turning to running position. This seems a sufficient length of time to start all triples to release, but an additional eight or ten seconds is also allowed for all air to escape from brake cylinders, particularly those on cars at the rear of train.

The release of brakes on long passenger trains following the first application, at such places as approaching stations, is a very important matter, since if special effort is not made to release all brakes, possibly train parting or wheel sliding will occur during the second application. The correct way of doing this is to hold brake valve handle in release position for about three or four seconds, after which it is returned to service application position and air allowed to escape from preliminary exhaust port until slight response is heard from train-pipe exhaust when handle is placed in lap position until second application of the brakes is desired.

It seemed unnecessary to make any reference in the foregoing to the operation of high speed brakes for the reason that so far as the engineer is concerned, he needs no special instruction regarding handling of same. Experience has shown that men who know how to handle the low pressure brake in accordance with modern methods have no difficulty whatever with high pressure brakes. Of course where mistakes are made in connection with the handling of the former brake, the same mistakes will be more serious when handling the latter.

We have, in the writer's opinion, heard more of fuel economy and locomotive handling than of train handling, and as our long and heavy trains have come to stay, it strikes me that we can not discuss too much the operation and care of air brakes, because it is a well-known fact that where a few years ago the expense incurred on account of damage to equipment due to the operation of the air brake was comparatively slight, the figures have reached an amount that makes it a problem of how best to reduce the cost. For that reason the principal portion of this paper is devoted to that subject.

The President—Gentlemen, you have heard the reading of the paper. What is your pleasure?

Mr. Chamberlin—I move that it be accepted, and that the matter be open for discussion.

Seconded and carried.

Mr. Toughey—Mr. President, I move you that a vote of thanks be given to Mr. Hurley for his reading of the paper before the club.

Seconded and carried.

The President—The paper is before you, gentlemen, now for discussion.

Mr. Ganson—Mr. President, I would like to ask for a little information. With a 70-pound train line, a man having 100 cars in his train, how long would the equalizing piston remain up with a 10-pound reduction, or how long would the discharge from the angle fitting be in seconds with a 10-pound reduction? I would like to ask that from the members. We have a number of air-brake instructors and engineers here.

Mr. Hurley—Mr. Chairman, I would prefer that some of our air-brake men who have made tests of this kind would answer the question, inasmuch as I have never had the opportunity of making any such tests.

Mr. Ganson—We have Mr. de Buck with us, a new member, and Mr. Brown from the Westinghouse that has made that test. We are handling long trains of 100 cars every day, and it is best for us engineers to know.

Mr. Talty—Mr. Chairman and gentlemen, for Mr. Ganson's information I conducted a test on 50 cars by making a 10-pound reduction, and the air flowed from the train-line exhaust or angle fitting 23 seconds, so I estimate from that on 100 cars it will be about double that time, or practically about 45 seconds.

Mr. Barry—I was present at some tests made on 100-car trains. Train-line exhaust from 10-pound reduction was about 50 seconds at the angle fitting.

Mr. Ganson—I would like to ask would there be any variation? We have new cars that measure from 5 to 8 feet longer than the old cars, where the train line must be correspondingly longer on the new cars than on the old. Would the exhaust be longer on the long cars than on the old cars?

Mr. Barry—Five feet longer. (Laughter.)

I might say that the train-line exhaust varies as to the leakage in train line, also we have found at different times that a good rule to follow, assuming that the train line is in fair condition, that a 10-pound reduction from 25 cars usually lasts about 9 seconds; on 50 cars in the neighborhood of 18 seconds; on 75 cars in the neighborhood of 27 seconds; and I said, on 100 cars we have found it varies from 48 to 56 seconds; it usually will last in the neighborhood of 50 seconds.

Mr. Brown—I don't know that I can say very much on this subject further than to endorse Mr. Hurley's views in the matter. I notice there is no mention made in Mr. Hurley's paper of handling trains on heavy grades. That is, with reference to the amount of initial reductions. It seems to me this is a point that ought to be covered. Neither does he make any mention of the method that should be employed in holding trains on heavy grades. I presume the reason for this is because Mr. Hurley has no heavy grades on the road that he works on. The practice on heavy-grade railroads at present is to follow the frequent application and short-hold method. That is in pitching over the grade to catch them up before the train is allowed to gain very much speed, by making a heavy reduction of about 10 pounds, the point being to try to slow the train down quickly so as to be able to release and make the retaining valves perform the duty for which they were intended. The old method was to try and get down grades with as few brake applications as possible, with the result that very frequently if there was much train pipe leakage and corresponding amount of brake cylinder leakage, the engineer found himself in a rather peculiar position when he got down the hill a considerable distance. So the recommendations now and the practice on most roads where they have heavy grades is to follow the heavy initial reduction and short-hold method, and make the retainers work every minute that we possibly can while the train is on the grade.

The cautionary signal which Mr. Hurley has given here with reference to watching the air gauge strikes me as being an important one. He states that the successful engineer consults the air gauge very frequently. Cases have come to my attention where men have been known to run along the road for over an hour, without looking at the air gauge, during which time the pump stopped and the pressure in the train pipe and auxiliaries allowed to become depleted to a point where, when the brakes were desired to make a stop the pressure was down too low to do any good. I would urge that in locating air gauges on locomotives that they be placed in a position where the engineer can see them without diverting his eye from the track, and that they be well illuminated at night. That would provide against any possibility, as Mr. Hurlev says, of the pump stopping and not being noticed, and also provide against the engineer leaving his brake-valve handle in a position which would prevent air passing into the train pipe to keep the train charged.

THE PRESIDENT—Mr. J. P. Kelly, of the New York Air Brake Company, I think the members would be pleased to hear from you on the subject.

MR. KELLY—Mr. President and gentlemen, I received an advance copy of this paper, but I must confess that for lack of time I have not read it over until today—until I had at the same time the pleasure of listening to Mr. Hurley read it. However, I can say that the paper as a whole strikes me as being a very good one, covering as it does many points which if carefully observed must produce good results. I notice at the top of page 3, that a recommendation is made there, as to the proper method of starting an air pump. The recommendation is not entirely new; but it strikes me that it has never been observed to the degree that it should be, and that, therefore, it is well to include this instruction; that is, to start the pump carefully and slowly, giving the accumulation of condensation a chance to run away; and to provide a cushion in the air cylinder end that will prevent knocking, pounding, and injury to the piston and rods, etc. The oil cup on the air cylinder of the pump is becoming a matter of very great importance since the air pumps of today have so much more work to do than they formerly had. With the ordinary oil cup that we have, the method herein recommended for introducing oil into the air cylinder meets with my approval, and I think with the approval of all who have given the subject any thought. However, in connection with this, I would like to take the opportunity to direct the attention of the members to the benefits to be derived from the automatic lubrication of the air cylinder. Automatic lubrication prevents the possibility of grit and cinders being drawn into the air cylinder through the oil cups and also provides a much more uniform method of lubricating the air cylinders, which results in a prolonged life of the air pump and in very much less heating and annoyance while the pump is under hard labor on the road. And this further results in a reduced number of pump failures. The subject of automatic lubrication was thoroughly considered at the late Air Brake convention and the opinion was unanimous that it was the only proper method for lubricating the air cylinders of pumps in modern service.

In the test of the air cylinder spoken of here, to determine the condition of the packing rings, and the efficiency of the pistons in drawing in air, I would like to call attention to the care which should be taken in making the test.

If we hold our hand near the air inlets of a pump, while the pistons are moving, we will feel a continuous intake of air; but this continuous intake is not a certain sign that the pistons are taking in all the air that the volume of the cylinder will accommodate. A restricted air inlet, such as is commonly seen in the shape of a restricted air strainer in which a number of the perforations are stopped up, and where there is insufficient lift of the air valves, might cause us to think that our pump and pistons were doing good work, because we felt a continuous intake through the entire stroke of the piston; but we would feel that simply because the air inlets were restricted. Under these conditions not so much air would be going in as the cylinders could accommodate, but a reduced quantity would be going in continuously.

I think the recommendations to blow out the train pipe on the engine and tender before leaving is a very good one, especially in cold weather. That eliminates the possibility of water and dirt being in there, or the probability of it being there when the engine is leaving the roundhouse to cause trouble later on the road. I think the recommendations in reference to the application of the brake on long freight trains are worthy of the most serious consideration, because today we have a great deal of trouble with freight trains and passenger trains, long ones, breaking in two, due to undesired quick action and to improper time of release and to various causes.

I don't know that I am prepared to go ahead today and give any recommendations for methods of obviating the trouble, because what consideration I have given the matter leads me to believe the subject is very complex and will repuire considerable careful thought before we can render a correct solution or come to a correct conclusion in the matter. After that is done then recommendations will be in order.

Mr. Hurley—Mr. Chairman and gentlemen, with reference to Mr. Brown's remarks about important matter that I omitted. No doubt I have omitted a number of things in my endeavor to condense the paper to make it interesting and as short as possible, so as not to tire out those listening or excite myself reading it. (Laughter.)

The President—There are several other air-brake gentlemen in the room, men that are supervisors and instructors.

Mr. Brown—Mr. Chairman, we have with us Mr. Talty, road foreman of the D., L. & W., and Mr. Page, road foreman of the Lehigh Valley. Both of these gentlemen have had long experience in handling freight trains and they may be able to give us some information.

Mr. Chamberlin—Call on them, and make them get up.

The President—Mr. Talty.

Mr. Talty—Mr. President, the question of handling long freight trains is certainly a very important one, that is, if it is done successfully. I believe that a locomotive engineer that is capable of rendering such service satisfactorily is entitled to more consideration than the man handling a passenger train. On the road with which I am connected we handle as high as 100 air-brake cars. I assume that Mr. Hurley's road, or the road he is connected with, handle about the same number. Frequently empties are intermingled with loaded and there is loaded on the head-end and empty cars on the rear end and quite frequently we have loaded cars known as "runners" on the rear end. Those are not equipped with air brake, and it strikes me in my observation that the engineer has got to adjust himself by making the proper initial reduction to suit the requirements. If the engineer is handling a train of 85 cars with a number of runners on the rear end, and he runs on a short flag, closes the throttle quickly and immediately starts to apply the air brakes, by making a 10-pound initial reduction, the chances are that those runners will race in with sufficient force for to buckle the train and perhaps throw some cars on the opposite track, which is very dangerous. Then again, we will assume that the rear end of the train consists of empty refrigerator cars, which we handle on a westward movement. The piston travel is adjusted on those cars when they are loaded and the brake hangers are hung from the body of the car. When the load has been removed the piston travel decreases and if engineer makes a very heavy initial reduction, the braking power on the rear end is so much greater than that on the loads, which are on the forward end of the train, it parts the train, and when the train parts the brakes go into quick action and that causes damage at times.

I fully agree with Mr. Brown on descending mountain grades, that a frequent application of the brakes is the best method and let the retaining valves do the work, because when the engineer descends a grade, and figures on making only a few applications, the chances are the leaks in the train pipe reduce his braking power to such a degree that he is in bad shape at the foot of the grade, and I think that the man that strikes the bottom of the grade with the auxiliary pressure the nearest 70 or 80, whatever he carries, is the best prepared to stop, providing, of course, the speed of the train has not increased beyond a dangerous point. I don't know as I can say anything more on the subject. I think Mr. Hurley has got a very good paper and practically along the lines which I am trying to have our men live up to.

No question but what the air pump is subjected to greater abuse than any part pertaining to the air brake, and when anything happens to the air pump, or it stops, of course the air-brake system is paralyzed. On our heavy trains it is scarcely considered good practice to run the trains with a disabled air pump or depending on the trainmen controlling the train by hand. We have had several air-pump failures, and it is usually due to the reversing plate bolts getting loose or the nuts working off of the piston rod on the air end.

Mr. Hurley—Mr. Chairman and gentlemen, I want to say that I am heartily in favor of Mr. Brown's remarks in regard to the location of the air gauge. I know it is a very important matter that the air gauge should be put within easy range of vision for the engineer, for it notifies him of any leakage.

The President—Anything further on this subject?

Mr. Talty—We have Mr. Page here of the Lehigh Valley.

The President—We would be pleased to hear from him.

Mr. Williams—Mr. President, I would like to have Mr. Talty explain his methods in determining quickly about where in the train the defective triple valve is when bothered with what is known as a kicker.

Mr. Talty—Mr. Chairman and gentlemen, I have been quite successful in being able to locate defective triples in the least possible time. While we all realize that time is very valuable to our trains in getting over the road, especially our manifest trains, we all realize that the seriousness of the brakes being applied in quick action, on account of defective triples, which would perhaps lead to some very serious accidents, due to the train buckling, perhaps, throwing cars over on the other track against opposing traffic.

I instruct all of our engineers that it is very difficult for the train crew to locate defective triples, unless aided by the engine-men.

First, I believe, the engineer can tell by the sound of the train-line exhaust about where the defective triple is located in the train; for instance, if the defective triple is two or three cars back of the engine, the train-line exhaust will cease about the time the engineer has placed his brake valve on lap position is making a five or seven-pound reduction. If the air flows from the train-line exhaust ten or twelve seconds when making the reduction mentioned, it denotes the defective triple is back twenty or thirty car lengths. If the flow of air continues twenty or twenty-five seconds in making a 10-pound reduction it denotes the defective triple is located fifty or sixty car lengths back of the engine. If this information was given to the train crew by the engine-man they could then go back about the number of cars mentioned and make a test provided for in Mr. Hurley's paper.

It is also well to look at the stencil on the auxiliary reservoir for the purpose of finding when the triple has been cleaned last. Usually when the triple found has not been cleaned for ten months or a year, the trouble is on that car. If so, the brakes should be cut out and the auxiliary bled off.

Mr. Brown—Mr. Chairman, in connection with the matter that Mr. Talty brings up, it seems to me that the main reason for triple valves giving trouble on the road is because the brakes are not tested with the maximum pressure before they start from terminals. Mr. Hurley has covered that point, it seems to me, very nicely in his paper. He states that the brake should be tested with the maximum pressure, or nearly so. Now, it is a fact that freight trains are being started out of yards daily on many roads and the brakes are tested with 50, 55 and 60 pounds pressure, where they should be tested at 70. It is also a fact that trains that are controlled by high-speed brakes are started out of stations brakes being tested with 60, 70 and 80, and the brakes work all right in the station, but occasionally where they get out on the road and the maximum pressure is obtained, trouble occurs. If more attention were given in the yards to the testing of brakes with the full pressure a lot of this trouble can be eliminated on the road. I don't quite agree with what Mr. Talty says about the date of cleaning. In addition to watching cars that are out of date, I would also urge him to watch some of those that have just been cleaned, say the day before or a couple of days before. Mr. de Buck, who is present, had an interesting experience of that character a few days ago, and I would like to have him explain it to the meeting.

The PRESIDENT—Mr. de Buck.

MR. DE BUCK—The incident to which Mr. Brown refers did not occur on a freight train. It occurred on a long passenger train. I think that in this case Mr. Cool was present, also, and I can not say now whether the maximum pressure was obtained, as I didn't get there until the train was about to start to board it. But when the first stop was made with this 13-car train, I noticed that an undesirable brake application was obtained, what we call an undesired emergency. At this first stop I didn't make any attempt to locate it for the reason that we often find cases where we obtain it once and don't obtain it afterwards. I said to the man whom I was talking to that I would try it once more. At the next station the same thing occurred again—the brakes went into emergency and stopped the train. I got up at that time and the first man I met was Mr. Cool, and I mentioned the fact to him and he at once mentioned to me that something undesirable occurred as he had been riding on the engine, and I went up to the engine, and asked the engineer what he had been doing. "Well," he said, "I can't account for it. It acts very queer, and it is a bad train to handle." I said, "What have you done?" "Well," he said, "I decided to cut down to low pressure, as I don't think it is safe to handle this train with high pressure under those circumstances." I said, "I have permission from the conductor to hold this train, so put it back into high pressure and make a very light reduction." This was done, and on going back to locate the piston that had not gone out of the cylinder at all, I was about the sixth car from the engine when the brakes all went into quick action. I went back, and at the same time noticing the date of cleaning on these cars until I got to the rear car, and as I got to the rear car the engineer motioned to me, as much as to say he had obtained the maximum pressure. I gave him the signal to apply the brake. He did so. The brakes applied on the last car, next to the last car, which was the thirteenth and twelfth cars, and on the eleventh car was not applied. Then I gave the signal to make a further reduction, and he did so. This brake applied in emergency, or undesired quick action, and stencil mark showed that same triple valve had been cleaned recently. Of course, I followed this train to terminal in order to find out just where the trouble was. The triple was removed from that car, and I went to foreman and he took the triple valve apart, and I found there that the triple valve was full of grit such as you would use for grinding a valve seat. It felt like an emery powder. The packing ring was perfect—did not catch on the counter bore, did not have any undue bearing—it was a perfect packing ring; but it was just this undue friction obtained from this grit that had found its way into the triple valve. The consensus of my belief was that the trouble was caused by the dirt finding its way in there from the train pipe.

THE PRESIDENT—Mr. Macbeth, we would be pleased to hear from you.

MR. MACBETH—Mr. Chairman, I don't think I should take the opportunity of saying a word, as there are so many learned air-brake men here today. As this question was put into the box by Mr. Brown himself, I think he would be the last one to go back on me. I desire to thank Mr. Hurley very much for the energy and time he has spent on this paper, as I consider it one of the best that has ever come before the Central Railway Club; in other words, one of the most interesting.

The PRESIDENT—Mr. Page has been called on several times. Will he kindly favor us with a few remarks?

MR. PAGE—Mr. President, I think Mr. Hurley, in his most able paper, has fully covered this subject, with the exception of terminal tests.

I would be pleased to have some one advise the best possible method of handling terminal tests with the least possible delay to traffic and power. In a number of cases I have noticed in terminal tests to air-brake trains, where no regular arranged air plant is used to conduct test of 75-car trains, engines are placed against train, air coupled up, and after 70 pounds train-line pressure is obtained, the engineman is given the signal to apply brakes, by the inspector, who is usually standing by the engine. He will start to rear of train, making a hurried inspection of brakes applied and piston travel, the latter not being seriously considered by the inspector, due to the fact that the Transportation Department is placing a delay against him for air-brake inspection. On reaching the rear of the train he signals the engineman to release the brakes, he retraces his inspection to forward end of train. He has noted the brakes have all fully applied and released, and his duties require him to pronounce them O. K. to the engineman.

It is possible for him to have missed a number of bad packing leathers on forward end of train, due to the fact that his inspection began at this point, and sufficient time not being allowed after brakes were applied to ascertain the true condition of brake cylinder packing. Now, the engineman, in handling this train over the division, has serious trouble on account of break-in-twos due to brakes leaking off on the forward cars, and remain applied on rear cars, causing the forward part of train to surge ahead, resulting in broken knuckles and drawheads.

The train crews in the majority of cases report accidents of this character due to poor handling of air brakes by the engineman, when the fact of the case is, it is due, in my opinion, to poor terminal test plants.

If we had up-to-date test plants and sufficient force to handle the work on good lines at our terminal points, air-brake trains would be handled more successfully. The train crews should have as thorough knowledge of the air brakes as the engine crews, to assist in the successful handling of long air-brake trains.

The **President**—Now, gentlemen, the further discussion we will have to make short, because this is a very important subject. We also have another important subject to bring up after this is over.

Mr. Elden—Mr. President, I was very much interested in reading Mr. Hurley's report, and listened to the discussion of the same on the subject of "The Successful Engineer." We have heard from the air-brake men, but there is one matter I wish to speak about, and that is the engineer reporting his work, to which Mr. Hurley refers. We find in roundhouses there is a great deal of money expended and unnecessary time put in, due to the engineers not properly reporting their work. Instead of reporting the engine blowing right or left valve, or right or left cylinder packing, or low steam, account of flues leaking, or steam pipes leaking, or leak in the front end, or other matter affecting the steaming of the engine, or the air pump does not work, account of air valve broken or something wrong with the piston, will not raise; they simply report engine does not steam, engine blows, pumps out of order. There are many engineers present and road foremen who should benefit by this subject, so nicely written up by Mr. Hurley, and they can also help the matter by calling attention of the engineers to this subject and save many hours loss of time to themselves as well as the company.

Mr. Thompson—Mr. Hurley has covered this matter so thoroughly in his very excellent paper that I don't see where much can be added to it. However, Mr. Elden has brought up the subject of engineers reporting work in roundhouses. Mr. Hurley has given us the idea of what a model engineer should be, and I am glad to say that we have a whole lot of them, but under the changed condition of things it is put up to us to get more engineers who will be models. I believe there should be a paper to follow this to give us pointers how to get those engineers.

Mr. Chamberlin—We are under obligations to the gentleman who prepared this paper, but compelling the President to call upon you gentlemen individually to respond and discuss the subject, it occurs to us, was entirely unnecessary. Now, you all appreciate the fact that you came here after reading the paper and discussing the matter pro and con in your own minds, as full of the subject as a "hickory nut is full of meat." You gentlemen are practical. What you say here goes on record, and you have reason to be proud of it. It is practice, pure and simple. It goes forth, that other people of our kind may correct their methods if found to be in error. Let none of us resemble a "sponge," absorbing everything and giving out nothing—unless squeezed. We were surprised at the response after our respected president called upon the gentleman to the left. I mean that gentleman who has all the deliberateness of Secretary of War Taft (whom he somewhat resembles), and the eloquence of Cicero. He was immediately followed by others opening up a discussion that was good to hear and beneficial to us all.

Gentlemen, when you are full of a subject, for goodness sake get up and talk. You may not all be Ciceros, but you can tell what you know about it, and that "is the meat of the cocoanut." Thank you. (Applause.)

Mr. Owens—I don't wish to delay matters here any, but I have seen a few complaints that Mr. de Buck has just spoken of, and I would like to ask if he makes any provision for testing those strainers or has any rule or regulation for finding them when out of order?

Mr. Macbeth—I think I can answer that for Mr. de Buck. We have.

Mr. Talty—The case that Mr. de Buck and Mr. Brown referred to is very remote. In fact, they are about as remote as a closed angle cock or angle cock working closed. The strainers as a usual thing in the "T's" are in condition to prevent any dirt, or a serious lot of it, working over into the triple, and I think the strainer being removed from the "T" is certainly a very remote case. I have seen brakes tested with the full pressure at terminals. I have seen several applications made, no bad results, no desired quick action, and perhaps just before reaching terminal or the second stop before reaching it, the undesired quick action would take place and cause damage.

Mr. Owens—I would like to say a word for the benefit of my next-door neighbor, Mr. Macbeth. The argument was brought up as to the length of time of train-line exhaust. I am very glad to say that the train-line exhaust has a longer blow now than some months ago, which shows that the condition is improving very much, as I can remember the time when train-pipe leakage was so bad on some roads that there was not much of any blow to the train-line exhaust when brakes were applied.—Central Railway Club.

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*Prevention of Smoke from a Bituminous Coal-Burning Locomotive.**

When one considers the violent draft in a locomotive firebox, when it is working, that combustion is attempted in a violent storm, it is not strange that some of the gases, smoke, etc., escape unconsumed. My conclusion is, after years of practical experience and a careful study of the problem, that it is impossible to maintain, at all times, perfect combustion with the above mentioned fuel in the firebox of a locomotive.

To burn any fuel enough air must be furnished to supply all the oxygen necessary to combine with the fuel; if not enough is furnished a waste occurs, and carbon escapes in the form of smoke and soot; this is the evil that I presume the crusade is against.

The chief difficulty in firing a locomotive is to feed the fire continuously and keep the supply uniform; no matter how expert a fireman may become, he will always keep coal enough on the grates to avoid losing the fire, and the result is more or less smoke. The fireman is not always to blame for the nuisance, for all practical railroad men understand how impossible it is to control the supply of air through the grates at all times to effect constantly perfect combustion.

Another difficulty, and a hindrance to combustion, is the frequent opening of the furnace door, which cools the temperature of the firebox, so that it is not always high enough to burn the gases arising from a fresh supply of coal, and I think all will agree with me when I say, if it were possible to keep a constant temperature in the firebox high enough to ignite the gas which escapes from the coal more perfect combustion would take place.

The average bituminous coal contains 80 per cent. carbon, 5 per cent. hydrogen and 15 per cent. impurities, a large part of the latter being incombustible, the two former are the chief factors in combustion; hydrogen to burn must be supplied with 36 times its weight of air, and carbon requires 12 times its weight of air for its perfect combustion; it is therefore obvious to us how difficult it is to cut a pound of flesh and not draw blood; I do not believe it possible to operate a locomotive, with present fuel and appliances, without smoke.

Have never had any experience with hard coal, but as it has a larger proportion of carbon and less of hydrogen should think its combustion would be more simple, from the fact that there is more solid carbon to burn; it would be an expensive fuel for us, owing to the great distance we are from its source of supply; it would require special grate bars, and I doubt if the suffocating gas from it escaping in train sheds would be tolerated by the traveling public. If it is more preferable than bituminous coal, it seems to me it would be more generally in use in the State of Pennsylvania. I do not think it will heat as quickly as bituminous coal or flaming wood, but would be hard to control in a train shed, in order that safety valves would not blow off after a good fire had been built.

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*Paper by Mr. J. A. Turner (C., St. P., M. & O. Ry.)—Communicated.

Coke does not burn well in a locomotive firebox: my observation has been that it burns well when air is forced through it, but when *pulled* through with an exhaust it does not give as good results, and would not make, in my opinion, a desirable fuel for locomotives.

If a change of fuel is imperative would recommend oil, such as the Southern Pacific uses on their coast division. I rode on one of their engines a short time ago, and must say I never saw perfect combustion on a locomotive until I saw oil used as a fuel; no smoke or cinders, and very little odor, and not as expensive as coal.

Before any other fuel is considered, it would be well to know what each will cost to run a given mileage, hauling maximum tonnage, by making a practical test of hard coal, coke and oil. It would satisfy all as to which would be the most desirable.

Mr. Foque: Before closing I wish to thank Dr. Ohage for giving us his time this evening and coming down to present his side of the case. Perhaps we have not progressed very far towards satisfying him, but I hope that he will go away from here with the understanding that the railroads are doing all that they can in this matter. (Makes this as a motion, which was carried.)

Dr. Ohage: I want to thank you, and I hope that I will be favored with another invitation from you, and that at that time you will have made tests of the hard coal.—North-West Railway Club, December, 1904, meeting.

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Discussion of Current Topics

The Address of James B. Dill.

The address delivered by Mr. James B. Dill, of New York, recently, at the commencement of Oberlin College, and which is published in full in this issue, is not only a true and clear statement of the dangers threatening our industrial, economic, social and political structure, but is as well remarkable and entitled to special consideration from the fact that Mr. Dill, from his extensive experience as a prominent corporation attorney, is necessarily thoroughly familiar with his subject. His declaration that much of our modern prosperity is bottomed on an "overproduction of fraud and sham" represents a condition of affairs of the existence of which the general public is apparently not aware, or, if aware, indifferent as to its possible, and (unless relief comes in some form) we fear inevitable consequences. The evil of fictitious and inflated values and the mad, frenzied rush to realize returns from them, whether in the form of dividends or otherwise is largely responsible for the conditions treated by Mr. Dill in his address.

It will be interesting to know that since delivering this address Mr. Dill has accepted the position of judge of the Court of Errors and Appeals of New Jersey, to which he has been appointed by Gov. Stokes, of that State, and that in accepting this appointment he has surrendered an estimated income of $300,000 per year, derived from his law practice, to become judge at an annual salary of $3,000. Men of character and influence are needed in public life in the present days of "frenzied finance," merciless monopolies and corruption in public office, and it is to be hoped that pure patriotism is the actuating motive which has caused Mr. Dill to surrender a $300,000 a year income to accept a $3,000 judgeship, and Elihu Root, the recently-appointed Secretary of State, to give up an income from his law practice of nearly $1,000 a day to accept a position in the President's cabinet at $7,000 per year. It at least demonstrates one thing, and that is that there are some men possessing great intellectual capability who value the honor of public office above the gratification of accumulating fabulous wealth.

Time alone will demonstrate whether these gentlemen will utilize the power they possess as office holders for the accomplishment of true public spirited purposes. It is to be hoped that acting upon a full realization of the fact that some of the most prominent and best educated men in our country are flagrant lawbreakers and base corruptionists, "Judge" Dill will take advantage of every opportunity his incumbency of that responsible position will afford him to render simple justice in case of law violations, whether the criminal be a ragged human outcast or one of the gentlemen just referred to. It is also to be hoped that Judge Dill, appreciating as no doubt he does, the extent to which government by injunction is resorted to by the class of refined law-breakers above referred to for the carrying out of their nefarious plans through the destruction of constitutional rights, will do all that may be in his power to discountenance this form of tyranny.

All that the great masses of the American people seek is *justice*. Judge Dill's remarkable utterances on this occasion demonstrate his thorough knowledge of the extent to which *injustice* has prevailed. It also evidences his natural candor and fearlessness and his superior educational attainments and practical experience, and should he make use of these attributes and acquirements in an honest endeavor to re-establish plain, simple American standards, and promote the welfare of the masses, his advancement to positions of greater responsibility will naturally follow.

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"Industrial Freedom."

The Wall Street Journal expresses itself editorially from time to time in a manner which is clearly expressive of its possession of a most commendable spirit of independence. Relative to Mr. Parry's advocacy of industrial freedom, which, of course, means unrestricted and unlimited freedom on the part of the employer to determine the price of labor, and incidentally slavery for the employe, the Journal expresses itself on this in particular and on Parry and Parryism in general as follows:

"The less interference with economic law, the better. More freedom of trade, less tariff restrictions; more competition, less monopoly; more liberty, less legislation and governmental interference—those are ideals to strive for and work towards. But we are always in the advocacy of any principle. Freedom is so desirous that we must have it at any cost; but too much freedom means anarchy. Mr. Parry pleads for industrial freedom. To that we say 'Amen.' But too much industrial freedom would lead to industrial anarchy.

"Order and justice must rule in our industrial relations. The danger is that measures taken to secure order and justice may lead to industrial tyranny. Somewhere between monopoly and unrestricted competition lies the point of highest 'economic' efficiency and national prosperity.

"But the thing that we would especially call attention to is that Mr. Parry in his appeal for 'industrial freedom' limits that beneficent principle to labor. He wants freedom for labor. But how about freedom for capital? He is much concerned about economic law in its relation to labor, but how about economic law and capital? What is sauce for the goose is sauce for the gander.

"One of the mightiest developments now going on in the world of business is concentration of capital. We are told that concentration is a result of natural economic law, and that any interference with it would be followed by the penalties which always visit violation of law. This concentration, however, is working toward the wiping out of competition and maintenance of staple rates and prices, and such regulation is interference with the law of supply and demand.

"What is trade unionism but another phase of concentration? May not labor copy capital? When we begin to talk about law and freedom, let us be sure that we mean law and freedom for everybody alike, both master and servant, employer and employed, capital and labor.

"Incidentally we may remark that Mr. Parry is doing the cause he advocates more harm than good, and the labor unions might help themselves by contributing to Mr. Parry's campaign expenses."

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A System of Merits and Demerits for Railroad Employes.

The following rules of discipline have been recently put in force on a certain large trunk line. They are said to be a modification of the Brown system, adjusted to suit conditions on the particular system where they have been adopted:

Commencing June 1, 1905, the enforcement of discipline by suspension (except as noted in Rule 6) will be discontinued, and discipline by record will be inaugurated.

Until further notice this will apply only to employes in engine, train, yard and telegraph service.

1. This system is introduced with the belief that it will be of benefit, and that it will meet with the approval and cordial co-operation of all concerned.

2. The objects to be obtained under the new system are:

A. To avoid loss of wages by persons employed and suffering to those dependent upon their earnings.

B. To stimulate and encourage all persons engaged in company service in the faithful and intelligent performance of their duties.

3. Superintendents will keep record of the service rendered by each employe under their jurisdiction. An accumulation of demerits or suspensions, showing that an employe is not desirable for the service, will call for special consideration.

Whenever the service of any employe is so generally unsatisfactory as to unfit him for further service, dismissal will follow.

4. No record shall be made against any employe without notice to him and an opportunity for explanation and defense with witnesses who are familiar with the case.

Each employe will be notified promptly in writing of entries made against his record. He will upon request be shown his own record, but not that of any other employe except on written request of that other employe. If an employe leaves the service for any reason he shall, upon application, be given a transcript of his record.

5. Bulletins showing cases of discipline, omitting name, date, train, location and penalty, containing a brief account of the facts in the case, and showing how the offense could have been avoided, will be issued from time to time as considered necessary or desirable.

Special credit will be given on an employe's record, and may also be bulletined, for notably excellent conduct, good judgment in emergencies, loyalty, etc.

6. The present method of investigation and consideration of all offenses of employes will be continued, but, while reprimands and suspensions by record will be administered for a given number of days, no actual suspension will be served by an employe at fault except that when an employe's demerits have reached ninety, actual suspension may be imposed, the number of days of actual suspension to be recorded, but not in demerit record. Employes at fault shall not be paid for any time lost on account of investigations.

7. When an employe's demerits have reached the number of ninety he shall be called in by the superintendent, duly cautioned, and advised that when his number of demerits amounts to one hundred he will be dismissed from the service.

8. No suspension by record will be made for a period of less than five days nor more than forty-five days.

9. A perfect record will be one against which no unfavorable entry has been made.

10. A clear record will be one on which unfavorable entries have been canceled.

11. Cautions, reprimands, and suspensions by record will be charged against an employe's record as follows:

A. A caution will be entered upon the record but will not call for a demerit.
B. A reprimand will call for one demerit.
C. Suspensions: The demerits will in each case equal the number of days of suspension.

12. Where demerits are given for unsatisfactory service it is logical that merits should be given for good service, and cancelations upon record will be given as below:

1st. A clear record for one year will cancel 6 demerits.
2d. A clear record for two consecutive years will cancel 18 demerits.
3d. A clear record for three consecutive years will cancel 40 demerits.
4th. A clear record for four consecutive years will cancel 75 demerits.
5th. A clear record for five consecutive years will equal a clear record.

13. Dishonesty, desertion, immorality, gross carelessness, intoxication, insubordination, incivility, willful negligence, incompetency, or disobedience of the company's rules will be considered sufficient cause for dismissal.

14. All employes affected by this system of discipline shall start on an even basis, that is, without merits or demerits.

15. Subordinate officers will see that information necessary to the proper keeping of the record of each individual affected is promptly forwarded through the proper channel to the superintendent.

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Hon. E. A. Moseley on Safety Appliances.

On June 19, 1905, Hon. E. A. Moseley, secretary of the Interstate Commerce Commission, delivered the following address before the Master Car Builders' Association, at its convention being held at Manhattan Beach, N. Y.:

Mr. President and Members of the Master Car Builders' Association: Since the last convention of your association a great forward step has been taken in the matter of safety appliance equipment, and I believe it is not too much to say that the Master Car Builders' standards and rules, so far as they affect the interchange of cars, are better observed today than they have ever been before.

The Johnson case, to which I called your attention last year, was decided by the Supreme Court of the United States on the 19th day of last December. This decision fully sustained the contentions of the Government, and firmly established the status of the law in all its essential features. It is now a settled rule of law that, for the protection of their employes, railroad companies are required to equip their cars with couplers that can be coupled and uncoupled without the necessity for men to go between the cars, and to maintain such couplers in an operative condition. As stated by Chief Justice Fuller, who wrote the opinion in the Johnson Case, "The object was to protect the lives and limbs of railroad employes by rendering it unnecessary for a man operating the couplers to go between the ends of the cars." That is the real test of compliance with the law.

Following the Johnson decision came the decision of Judge Humphrey, of the Southern District of Illinois, in the case of the United States vs. The Southern Railway. This decision fortified the law by holding that to use a car at all when its safety appliances are in such a defective condition as to compel men to go between the cars is in itself a disregard of law. It was also decided that reasonable care or due diligence to keep the equipment in order is no defense to an action brought to recover the penalty prescribed by law; also, the use of an M. C. B. defect card to cover defects to safety appliances does not relieve a carrier from responsibility for accepting a car in a defective condition from one of its connections.

There were a number of cases that hinged upon this decision, and it was at one time stated that the railroad contemplated an appeal, but after thoroughly investigating the subject this idea was abandoned (if it had ever been entertained), and all the roads involved have paid the statutory penalty for violation. The law has, therefore, met the most sanguine hopes of its friends, and with a President and Attorney-General both determined to see that it is enforced to the letter, the efforts of the commission to perform the duty imposed upon it, with the earnest co-operation of many railroad managers and members of your association, have resulted in a vastly better condition of equipment the country over.

To illustrate the improvement that has recently taken place, I shall not mention names, but will give you the result of some recent comparisons made by us from the reports of our inspectors, covering two of the largest systems in the country. For the six months ending December 31, 1904, reports covering these two systems show that of the cars inspected, 38 per cent. and 21 per cent., respectively, were found to be defective, while for a period from January 1, 1905, to date the defective cars found were but 8 per cent. and 2 per cent., respectively, on approximately an equal number of cars. This is a very gratifying result, the more so as it is an indication of a general improvement that has taken place in the past six months, and I have no doubt that the result of this improvement will make itself manifest in a vastly decreased number of casualties to employes when our accident statistics for the year make their appearance.

One question that has been brought to a head is the acceptance of defective cars in interchange, with the understanding that the receiving road will repair them. This has been the rule in many places, as you are aware, but since the Johnson and Humphrey decisions have been rendered it is rapidly being done away with, so far as safety appliances are concerned. The rule now coming to be most commonly observed is that no road will receive cars in interchange unless all safety appliances are in perfect order. This is the only practicable method whereby receiving roads may protect themselves from the consequences of violation of the law, and the commission has exerted its influence to secure general adoption of the rule. In some cases this rule has entailed hardship, as it has led to the detention of live stock and perishable freight, and has necessitated the hauling of defective cars for considerable distances, in order that they might be repaired, but such results were only to be expected as a consequence of the changed conditions, and make it all the more imperative for delivering roads to pay proper attention to the inspection and repair of cars at interchange points. The natural result is bound to be that each road will pay proper attention to its own repairs, instead of passing the burden on to its connections, and the number of defective cars at interchange points will be reduced to a minimum. In other words, each road will do its part and no road will be unduly burdened. It is confidently predicted that before a year is over a railroad will no more think of accepting a freight car that is out of order than it would think of accepting a passenger car in improper condition. And this is as it should be. It lessens the number of accidents, reduces the number of damage suits, and leads to rigid inspection and an ideal condition of equipment.

The commission has repeatedly been requested to interpret the law in certain particulars, and has been asked whether this thing or that thing can be permitted, or whether this device or that device can be used. Such questions are idle, as the commission can give but one answer to them, and that is to furnish copies of the law and the decisions of the courts interpreting it. Interested parties should familiarize themselves with the state of the law, and decide for themselves what is and what is not a violation. If in doubt on any point they should ask the legal department of their roads for a ruling, and not the commission. On the commission is imposed the duty of seeing that the law is enforced, and it is entirely out of place to ask an officer charged with the enforcement of a law whether in some particular instance he intends to perform his duty or not. If an accident happens to cars in transit; if a sudden jerk breaks an uncoupling chain or pulls out a drawbar, the best answer as to what the commission would do about enforcing the law under such conditions is for one to apply the rules of ordinary common sense. The law does not require impossibilities, nor does it aim to impose burdens that can not be met, and even a Government inspector or prosecuting officer must be given credit for the possession of ordinary judgment and the ability possessed by ordinary men.

It is very gratifying to be able to state that in most instances railroad officials have heartily co-operated with the commission in its efforts to secure compliance with the law, and I embrace this opportunity to extend the thanks of the commission to the members of your association who have so faithfully and earnestly labored in harmony with the commission, in the face of many difficulties, to bring about the pleasing results that now obtain. The commission's rules of inspection, which are based upon your standards and recommended practice, as well as the law, are being generally accepted and recognized as the criterion of proper conditions. When this becomes fully the rule of action the necessity for prosecutions, or for further legislation covering these matters, will be entirely done away with. In this connection I desire to reiterate what I have before stated at these conventions, that I hope to see the time when the standards and recommended practices of your association shall be the law of the land, and I think you will agree with me that events of the past few months have given your standards and practices a quasi-legal standing, in so far as they are covered by the rules of the commission.

I desire to call your attention, with special approval, to the various orders and rules that have been recently issued by carriers with regard to the acceptance of foreign cars in interchange, and methods of inspection; and particularly do I wish to commend the circular of instructions issued by the Baltimore and Ohio Railroad. These rules foreshadow the ideal condition of equipment which the members of your association and the commission have so long hoped and worked for.

I have no doubt that the pleasant relations that have always existed between the master car builders and the commission and its corps of inspectors will be maintained in the future. We have sought to impress our inspectors with the idea that the master car builders and ourselves are working to a common end, and have insisted that they shall be familiar with your rules and standards, such familiarity, in fact, being one of the prerequisites of appointment to the position of inspector. For our inspectors and myself I desire to thank you for the uniform courtesy and good will manifested towards us by the members of your association, and for myself I thank you for the opportunity you have given me, by your kind invitation, to be present at this convention. I congratulate you upon the grand work you have accomplished, and thank you for your attention.

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"Back to Beginnings."

The following very interesting and remarkable address was delivered by James B. Dill, a prominent Eastern corporation attorney, and since appointed to an important New Jersey judgeship, on the occasion of the commencement at Oberlin College, Oberlin, Ohio, June 28, 1905:

PREMISE.

The distinguishing characteristic and crowning glory of our American colleges is their close and intimate relation with the needs of our national life. It requires, therefore, no apology at this time and before this audience to depart from the traditional commencement oration and discuss a topic of an essentially practical nature.

INTRODUCTION.

The purport of what I have to say to you of today's graduating class is to tell you plainly something of the kind of post-graduate education you are likely to get from the world, to state to you as clearly as I may out of my own experience what, as educated men and educated women, you will encounter in your future attempts to educate yourselves in the world, or, more accurately, in the world's attempts to educate you.

The world's school begins tomorrow. You must choose your course now, and it is of the utmost importance that you make a correct choice, for education in the real school, the school of life, is compulsory.

I.

BASIC FACTS.

No intelligent man or woman can fail to realize that the smoke upon the social, financial and political horizon indicates fire.

So much talk of "frenzied finance," of troubles in the business world, of dissensions in our great financial centers, of corporate oppression, drives us to the conclusion that something is wrong in the financial situation.

And something is wrong there.

Reports of political dishonesty, of corruption, of graft, indicate that the political situation is not all that it should be; that something is wrong in our governmental machinery.

And something is wrong there.

What is it that is wrong?

Some people have been content to assert that the secret of the difficulty is the tendency towards great aggregations of capital, great corporations, and that this is the real cause of our troubles. Is this the answer?

True, this has been an era of consolidation.

And it is a fact that while originally men sought consolidation for the purpose of added strength, later combination was sought as a method of covering up weaknesses, to conceal fraud, to hide deficiency, to join the weak with the strong, and to pass the whole over to the public as a sound proposition.

Aggregations of capital and corporate or other combinations are often the centers where such evils become most apparent. *But these are not the things which are wrong.* They are the symptoms; they are not the disease. They are not the cause. The real evil lies in men, in character. And I do not mean "other men." The trouble is with you and me—it is personal.

We are answered on all sides that we are in the midst of an era of prosperity.

"Prosperity" is a comparative term. If you mean by it that everything is all right, that the affairs of the country are proceeding upon a basis on which they ought to proceed, that there are no perils in the present situation, no dangers to be eliminated; in short, if by prosperity you mean that there is no need of reform or reformers, then I must disagree with you. Hailing as I do from a financial center, I say, "You and I are not prosperous." We may be rich in money; our stomachs may be full, our heads and our hands busy. But that is not prosperity, nor all there is of prosperity. All is not well. For we are losing sight of *character.*

Note the trusts. It is said that some of these aggregations of capital have contributed to our material prosperity; that is true, and it is good. But it is also true that some of these combinations are using their forces and their energies to accomplish their own ends, without due regard to the rights of individuals or of the public. This they do naturally. Power always carries with it an instinctive human desire to adopt the theory that "might is right." Some of our foremost men are working on that theory.

The menace in our so-called prosperity of today is that the men among us who become powers—financial, political, social—abuse their power. Conditions in the business and financial world are not wholesome. Let us look a little deeper. The trouble is not with matters in the abstract, it is not with theories, it is not with forms. The trouble is concrete. The evils of the past are our fault. The wrong is personal. We are not honest.

The cause of today's existing evils is not that our theories of finance or politics or corporation law are wrong. They may be wrong, but they are not "*the*" wrong. Back of them are the evils which have their origin within our men and our women. No; the cause is personal; and —this I say deliberately—the greatest wrongdoing is by educated men and educated women.

Of pretenders, deceivers of the public, grafters, the most skilful and dangerous are found in the ranks of educated men and educated women.

Men—and women—of high social, financial and political standing, have established for themselves a code of conduct at variance with the good old-fashioned, somewhat obsolete Ten Commandments. That is where the fault lies; it is ours—yours and mine. These men and these women are made of the same material of which we are made. We do in our spheres what they do in theirs. We are at fault because we uphold and follow them.

A large part of our modern prosperity consists of an overproduction of fraud and sham. The crisis is acute. A feeling of distrust is growing throughout the country. Many branches of financial business have been in one way or another taken possession of by the unscrupulous for the purpose of deceiving the unwary.

Trust companies have been made the mediums of the flotation of specious and fraudulent promotions.

Some life insurance companies, the highest and what should be the most sacred form of investment, are, as we all know now, conduits through which the savings of the policy-holders are steered into operations for speculative purposes.

Credit and good faith, not money, are the basis of business. Good or bad, our modern prosperity is founded on public confidence. Take that away and the whole fabric falls.

Well, we are taking it away.

Distrust—the rust which corrodes public confidence—is spreading in the land. Suspicion is taking the place of belief, scepticism is taking the place of public faith; many are inclined to view an honest investment with a feeling of doubt and fear; many refuse to invest in new enterprises, because they prefer to place their funds in savings banks, trust companies, insurance companies, where they think their savings are safe. And there also, we are hearing, these savings are used by those in control for private speculation. We hear aright. These facts make every educated man and woman stop and ponder, as I bid you stop and ponder now. But what I want you to see is how human these faults are: how natural; how they come home to all of us; and how we—you and I—are the people to blame, the people who alone can check the evil.

But note that this indictment of our business life is not based upon an inherent, incurable defect in American character.

If this were true it would be useless to discuss the matter further, for, however keenly we might rebel against the situation, we must perforce either tamely submit or join in the riot for easily acquired wealth of which these evils are the outgrowth.

The fact is that the unprecedented material growth of the country, the resulting creation of immense private fortunes, the bringing together of great aggregations of corporate capital, industrial combinations and railroad mergers, all have tended to center the attention of the people upon great financial deeds and to rank men accordingly, causing the people to forget elementary virtues of private individual life.

The effect upon the great men themselves—presupposing that they are of the same honest makeup as the average American—of turning their entire energies and attention to the tremendous projects possible only in this country of tremendous possibilities, has been to cause them to forget the same elementary virtues in their business life, however carefully they may attempt to adhere to them in their religious, family or social relations.

So, in a spirit of optimistic rather than pessimistic analysis, we look at the recognized evils in our national life, and trace, if we may, their beginnings.

II.

DANGER NO. 1.—PRETENSE.

The early temptation that comes to an educated man or woman is *to seem rather than to be.*

It may not seem very wrong to you and me to pose, and yet the poser is an incipient fraud.

It is passing a human counterfeit on the public. You and I are not only the coin, but the manufacturers of the coin, and if we keep what we attempt to get for it—an opinion of the public that we are better than we are—we are chargeable with theft.

Are we not attempting every day to cover up our deficiencies with a patch of pretense rather than by hard work endeavoring to eliminate them?

Neither men nor women can persist and continue in an attempt to mislead the public without misleading themselves, and the moment they acquire the power to dull their sensibilities, to stifle their consciences by presuming, assuming, and finally believing that they are what they are not, they have practically accomplished their own self-destruction by passing counterfeits upon themselves.

The pretender becomes a borrower and the borrower becomes a thief.

III.

DANGER NO. 2.—THE EASY DOLLAR.

Wealth, to most people, is something that is sought for largely because other people seem to enjoy and prize it, not because of a conviction of individual need of it. It is the adoption of another's standard or criterion of happiness. It is the attempt to put on another man's coat because it seems to look well on the other man. I know of lawyers, great legal minds, who would be happy if they were merely practicing law, but their clients have money, so they want money. They have caught the disease and they are not happy. They devote their lives to acquiring riches; they sacrifice every other aim and purpose in life, they become and are rich, but that is not what they want to be, or what they are fitted to be.

And what is the disease they have caught? It is the malady of making money *easily*. Mark the word "easily."

We have heard for years that the American people worship the dollar. I tell you they are led astray by the "*easy dollar*," by the ease with which great wealth is often accumulated.

It is the desire for unearned wealth which sidetracks educated men and women from their real careers.

I believe that not 20 per cent. of the young men and young women in this audience are meant to be rich. They are meant to be great physicians perhaps, or great lawyers, or great preachers, or great teachers, or great painters; but when they go out into the world probably 80 per cent. will be tempted to seek wealth, to join in the chase for what the other man wants.

If I could persuade those of you who are meant to be teachers, or preachers, or writers, or lawyers, or musicians, or painters, to teach, to preach, to write, to plead and to paint unswerved by the tremendous influence of the great majority, I should have done a sufficient service for this day.

But that is not my thought. What I want to tell you you must do if you are to save yourselves and this country is to avoid the pursuit of unearned wealth, the accumulation of easy money. That is graft. *The man who gets a dollar without earning it does himself an injury, and the world a wrong.* Such a man is an abstractor. He is not a producer. He seeks to support himself by the sweat of another man's brow. He first does himself an injury, because he disables himself. He loses the ability to create, to produce, to earn. He becomes a grafter. And he does the world a wrong because the man who gets his neighbor's money without earning it, without giving his neighbor full return, is not only a robber; he makes the world a "graft."

IV.

DANGER NO. 3.—GRAFT.

Graft is the advanced stage of the craze for unearned money. Primarily it is not so much the desire to get something for nothing, or, rather it is not only the desire to get something for nothing, but it is an attempt to get something for the grafter in consideration of his parting with something that does not belong to him.

It is a wrong greater than that of the counterfeiter, who merely makes and passes counterfeit coin. The grafter is a man who robs the counterfeiter, who made the coin; the grafter then passes the spurious coin to the public as genuine.

The grafter is a double villain.

The essential element of graft is a breach of trust.

Graft is well nigh universal. We meet it in its various forms everywhere. *Its most common form, however, is the illicit use of power or authority.* The legislator who is influenced by the argument which appeals to his pocket rather than to his sense of civic obligation, practices a form of graft which is dangerous to the community. The public is awakened now to the danger of this man. We know him; we understand him. Some day, and none too soon, we shall refuse to vote for him, and then he will pass away.

Another form of graft is that of the bank official, the officer in a financial institution who is influenced in the use of the funds of the institution by any reason other than the good of the institution. Such a man is dangerous to the community—as dangerous as the political grafter—but we do not always recognize him. His position is so high and his form of graft is so insidious that its existence ofttimes is not suspected until the explosion resulting from his grafting has injured the community and made the man and his practices notorious; but too late.

The director of a corporation who directs the affairs of a company from the viewpoint of his own pocket rather than from the standpoint of the stockholders' interest, although he may not be indicted by a grand jury, is none the less a social highwayman.

The officer of a company who is individually or as a member of a firm the seller, and in his representative capacity acts for his company, the buyer, may be guilty of a legal as well as a moral crime.

And this crime is common. It is an everyday occurrence. It is an ordinary form of graft.

There is ground for the assertion that because the men who do these things are too high up, because they have too much money and too much influence back of them, their acts are designated "operations" rather than "crimes;" and as such they are applauded, not punished.

The dummy director of a great company who dummyizes himself for pay whether by the year or by the job, who uses his position to control the use and disposition of other people's money for personal gain is in no position to criticise the clerk who falsifies his accounts, or the employe who embezzles. Yet we all know of instances where men who have stolen a million have sent to jail employes who took only hundreds or thousands of dollars.

Now whose fault is this? It is ours. It is the fault of public opinion, and public opinion is our opinion, yours and mine—yours of me, mine of you, ours of all the rest. We have to learn to recognize graft and the grafter, however respectable their disguise—and to punish them, not alone by imprisonment and fine, but with all the might of the terrible scorn of society. We have to recognize that the seeds of socialism, anarchy and revolution are sown by the man of our own class and kind who pretends to be what he is not; they are cultivated by the bank and the insurance officer, by the man in power in financial organizations, in short by *any* grafter who in his dealings with the public departs openly or secretly from old-fashioned Ten-Commandment honesty.

THE CONSEQUENCES TO THE GRAFTER.

I say again that the fault is not with the corporate form, the aggregation, the association, but with the individual.

I repeat that the reformer who only attacks corporations inveighs against form rather than substance. He is missing, perhaps he is avoiding, the issue.

It is easier for the preacher to discuss sin in the abstract rather than from the pulpit to indicate the members of his congregation who are sinners. So it is easier to condemn theories, associations, platforms and organizations rather than point the finger at the man or men and specify the wrong. But this is too easy, and it is too harmless. Our national evils are personal evils and reform must begin with educated men and women.

We need, we must have character.

Many men of education, of power, financial and political, seem to develop a double-barreled conscience, one for business use and another for the individual life. This is fraud.

I say that the man who attempts to do business upon one basis of morals and live as an individual upon another basis is a fraud.

The man who would not cheat in a $1.50 transaction but would do so in a million-dollar deal is living on a false basis.

If any man attempts to pluck his heart out of his living body, hoping to replace it without becoming a corpse and staying a corpse, he makes a physical mistake. The man who attempts to take his conscience out of his body as he enters his banking house, or his business house, or who, when he attends directors' meetings, or a syndicate conference, attempts to leave his conscience on the door step, like a half-burned cigar, while he attends to business, will find nothing but a cold remnant when he returns—a dead conscience.

The practice of doing things, or permitting things to be done by men in syndicate or as members of a corporate aggregation which the individual would not do in his private life, upon the theory that syndicate and corporate morality is one thing, and individual morality is another, results in the total suppression of individual honesty and morality.

In short, the man who inserts the plank in his theological belief that his corporate acts will be judged by one standard and his individual acts by another, here or hereafter, makes a mistake.

No man can have two standards of morals, one for his individual life, and the other for his business life without the inevitable result, that the baser standard will prevail. As a man is in his business life, so will he become in his private life.

The man who attempts to play Dr. Jekyll and Mr. Hyde invariably suffers the doctor's fate mentally and morally.

VI.

THE CONSEQUENCES TO US.

The direct result, the inevitable result, the logical conclusion of a false standard of morality in business is the corruption of our laws and their interpretation.

The man who in business life shields himself under the fact that he is but one of an aggregation, a member of a syndicate, an officer of a corporation, a director of a trust, the man, who takes as his code of morals that which has been publicly announced by many men, viz., that certain things were done because they were not forbidden by the statutes—that man is sowing the seeds of socialism, anarchy and despotism.

The man who makes the only metes and bounds of right and wrong the enactments of the legislature and the interpretation thereof by the courts, has for his god, his religion, his conscience and his guide, a movable standard and the tendency of the movement is downward.

That man in reality asserts might is right so long as it is not forbidden by statute; that the exercise of merciless power is justified so long as it has not been expressly prohibited by human law.

Man is always keen to invent a new way of perpetuating a profitable wrong, and if the wrong to him is a wrong only when, if and after it has been so defined by the legislature, he endeavors to deal with the legislature.

The impairment of our legislature follows.

If might is right so long as it is not forbidden by statute, then if the statute is in the way the next step is to get it out of the way.

Statutes are man-made formations, and men are human; the majority of them are influenced by their environment and their concomitants, hence power and capital supply the concomitants which result in the removal by legislatures and municipal bodies of the offensive restrictions.

I will not pass by the responsibility of the lawyer in these matters.

It is said that when a man retains a lawyer he retains the lawyer's conscience as well.

Many a lawyer has sunk his individualism under his retainer. Less frequently we hear of the lawyer who says to his client "That may be legal but it is wrong and I will not approve of it or aid you in the doing of it." The lawyer too often advises his client, his corporation and the directors how far they may go without subjecting themselves to a civil or criminal liability. Less frequently he raises the question of right and wrong. He says he is not here for that purpose.

In so doing the lawyer commits his clients to the doing of things against a third party for which, if the lawyer himself were the third party, he would feel justly resentful.

Too many lawyers are forgetting today the high standard set for them in the doctrine that the attorney is the keeper of his client's conscience. And these lawyers are prosperous, some of them are the leaders of the bar and as such they are admired by the most of us.

CONCLUSION.

I can not here and now lead you through all the ramifications of the evils which are burning back of the smoke of modern criticism. I have shown, I think, that these evils, which are undermining the foundation of American business and the institutions of American government, are founded in the weakness of American standards of greatness and if not checked will ultimately undermine American character. My point is that "American character" means your character and mine, and it does seem to me that the question of the day is "What are *we* going to do about it?"

My answer is suggested by your commencement.

We must all go, where you are, "Back to Beginnings."

I think that the simplest reform—the hardest, but the first—is to make up our minds not to do ourselves those things which the other man is doing, but which are wrong.

The next reform is to reform the other man.

This is the reverse of the usual process. The common procedure is to try first to correct others. But we fail because we soon see that if we push that sort of reform to the last analysis, we interfere with our own graft; or, if our fundamental honesty is brave enough, we realize that we are not fit to throw the first stone.

So I say that we older men and women must go "back to beginnings," and, as for the younger men and women, you whose commencement day this is, you who are at the beginnings—to you I say: Stay there. You can throw stones. Throw them, and throw them straight and throw them hard, and above all things do keep yourselves fit to throw them always.

Don't pose, don't be frauds. Be genuine. Be true to yourselves. Be yourselves. Seek what you really want. Take no course in life simply because others take it. Put on no man's coat because it is becoming to him. Make your point of view your standpoint. Don't proclaim it as the hub of the universe; it is only a firing line, but stand on it and fire.

Don't chase the easy dollar. Money is good, but money will come if you do your work well. Give the world full value, and the world will prize and pay you for the character your honest effort will have developed. And even the bad world appreciates character. Did you not notice how a few weeks ago one of the great financial institutions, under charges of financial graft, searched this country to find a man of national reputation and of shining purity of character?

Get that character and reputation, get for yourselves the benefit of the exercise of mind and body that comes from *earning money*, but let your dollars be but the evidence of the recognized value of your work in the world.

Having that, however, having character, require it of others. Help to create a demand for honesty. Having done your duty as a man or as a woman to yourselves, do your duty to the rest of us—do the work of a member of society, of a citizen of the world.

In a free democratic nation such as ours, we—you who are at your commencement and I who have come back here to the beginnings—I tell you that we need men and women who not only will not lie, or steal, or cheat, or bribe, but will make crimes criminal and fraud and graft a disgrace, even though they are successful, even though the wrongdoers live next door, belong to our club, go to our church.

That I may not in anywise be misunderstood I say to you again that this indictment of our business life is not based upon an inherent, incurable defect in our American character, but, on the contrary, these evils are an outgrowth of our American strenuosity in the riotous race for the easy dollar and the many dollars. I wish to distinctly avoid leaving the impression upon your minds that an unduly large proportion of the American people are of the class which I have sought to call to account. Rather let me, in conclusion, point you to the silver lining to this cloud; emphasizing the fact that although the indictment is well founded, nevertheless we may rest assured that in the hearts of the genuine men and women, the plain people as well as those who have had the advantages of higher education, and I will not include those who have had the advantion, and I will not exclude those who have had the advantages, or disadvantages, as you may chose, of a competency, there is an appreciation of the importance of character; that the rank and file of the American people not only believe in, but stand for right living and a conscience undimmed and unfettered by business environments.

Therefore, right and honesty will triumph; a saturnalia of graft and an era of grab will find itself short lived, eliminated by the uplifting influences of educated men and women of character, a consummation which will receive fresh vigor and renewed impulse from those who today are "back to beginnings."

You and I have enough of the optimist in our make-up, we have sufficient faith in the ultimate destiny of our country, to feel convinced that there is no indication of the presence of an ineradicable disease in our national life. In fact, I have spoken thus plainly because I am convinced that a cure is possible and that this cure will come through the efforts of men and women such as you.

Wherefore, ladies and gentlemen of Oberlin, 1905, start right, steer right, stay right and—make the rest of us come "Back to Beginnings."

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New Co-operative Concern.

With a view to pushing in the most practicable manner possible the sale of Union Label goods, a co-operative concern has been projected at Elgin, Ill., which it is proposed to make national, and which, according to advices, is to be conducted under labor union auspices. It appears as though this movement is the result of a fight against the Employers' Association, involving all the building trades of that city. It is proposed that "the business of the association will be divided into two separate parts. The general department, including the mail order, jobbing, wholesale and manufacturing departments, will be under the management of general officers and a board of twelve directors. Local 'co-operatives,' including construction companies and other lines of business, will be financed by the local organizations, and local investments will be under supervision of local officers and a board of trustees. The latter will be under supervision of the general association.

"The capital is to be divided into shares of $10, paid up and nonassessable. Local 'co-operatives' will be organized wherever stock is subscribed, and the people desire to take advantage of the association's offer to supply the public directly from the farm, the field or the factory. Profits resulting from these local co-operatives are divided among the local stockholders and patrons."

The projectors of the movement are encouraged by the success of Labor Union Co-operative stores in England, which it is claimed yielded in 1904 the enormous sum of $20,000,000 in profits to their stockholders.

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Industrial Notes.

Current advices state:

That Japanese labor troubles continue in the Hawaiian Islands.

That women chimney-sweepers have organized in St. Petersburg and Moscow.

That the old-age pensions bill, recently introduced in the British House of Commons by Mr. Channing, allots 5 shillings a week to British subjects aged 65, after 20 years' residence.

That the employers in the building trades of the Rhenish Westphalian district have dismissed within a fortnight 30,000 workmen who belonged to labor organizations.

That the recent conference of trades and labor councils in New Zealand passed resolutions urging the establishment of state iron works, woolen and flour mills, clothing and boot factories, and the nationalization of the mineral wealth of New Zealand.

That only one change in hours of British labor was reported recently. It affected 1,500 bricklayers and bricklayers' laborers at Leicester, Eng., whose working time during the summer period was reduced by two and a half hours per week, as compared with the previous summer period.

That no persons are allowed to land in Cape Colony, S. A., unless they have secured work beforehand, or possess $100 on arrival.

That the Massachusetts Supreme Court handed down a decision recently holding that the attempt to force all laborers to combine in unions is against the policy of the law, because it aims at a monopoly of the labor market.

That returns received from certain selected British ports (at which 80 per cent. of the total tonnage in the foreign trade is entered and cleared) show that during April 35,506 seamen were shipped on foreign-going vessels, an increase of 1,681 as compared with the number shipped in April, 1904.

That the Secretary of the New Zealand Department of Labor has circularized the trade unions of that colony, with the object of collecting statistics to enable him to ascertain as nearly as possible the ratio between the wages of workers and the rents they pay for their dwellings.

That after a long period of partial employment and no employment, the cotton operatives in Lancashire, Eng., are having a run of constant work.

That allowing lawyers to appear in the arbitration court has proved a great drain on the funds of New South Wales unions which have placed their cases before the court.

That the Lanarkshire (Scotland) Miners' Union added $25,000 to its funds during the last six months of the financial year.

That unemployed men are still rapidly gathering in and around Bundaberg, Queensland, in the hope of securing work during the coming sugar season.

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Contributed

*Fourth Annual Report, Legislative Board, B. of L. F., of the State of New York.**

Red Jacket Lodge No. 85.

BUFFALO, N. Y., March 3, 1905.

The Hon. Harry Wayland Hill, Senator Forty-Seventh District:

DEAR SIR.—We are desirous of having a bill introduced and passed by your honorable body, known as Senate bill No. 380, to relieve employes from assuming the risk of injury or death from dangers in the employment, which by exercise of ordinary care the employer might have guarded against.

Therefore, be it resolved, That we, the members of the Brotherhood of Locomotive Firemen here assembled, do hereby request our Senator, the Hon. Harry Wayland Hill, to introduce and support this measure.

Thanking you in advance, we are,

BROTHERHOOD OF LOCOMOTIVE FIREMEN,
W. F. COE, *Sec.*

(*Copy.*)

BUFFALO, N. Y., March 2, 1905.

R. E. Quirk, Chairman New York Legislative Board, Albany, N. Y.:

At a regular meeting of Lake Erie Lodge No. 241, Brotherhood of Locomotive Firemen, the following resolution was unanimously adopted:

WHEREAS, The Hon. Senator Lewis of Rochester, N. Y., has introduced a bill in the Senate of the State of New York, known as Senate bill No. 380. The object of the bill is to avoid in certain cases what is known as "the assumption of risk" by the employe.

Therefore, be it resolved, That we, the members of the Brotherhood of Locomotive Firemen in meeting assembled, do hereby request our Senator and Assemblyman from this district to do all in their power to assist Senator Lewis in securing the passage of the above-named bill.

Resolved, That a copy of this resolution be sent our Senator and Assemblyman, and to Senator Lewis, also to the Chairman of our Legislative Board.

(Signed.)

J. B. WINANS, *Secretary.* ODD THOMPSON, *Master.*

[SEAL.]

Elmira Lodge No. 463.

ELMIRA, N. Y., March 8, 1905.

Resolutions adopted by Elmira Lodge No. 463, B. of L. F.:

WHEREAS, The Hon. Merton E. Lewis has introduced a bill in Senate, No. 380, known as the "assumption of risk" by the employe, be it hereby

Resolved, That the members of Elmira Lodge, in meeting here assembled, do hereby request our Senators and Assemblymen to urge the passage of this bill.

Resolved, That a copy of this resolution be sent our Senator and Assemblyman and to Senator Lewis, also to our legislative chairman.

Yours very truly,
E. E. WELTON,
Master.
L. W. OAKLEY,
Secretary.

[SEAL.]

Red Jacket Lodge No. 85.

BUFFALO, N. Y., March 9, 1905.

Mr. Thomas E. Ryan, Secretary Legislative Board:

DEAR SIR.—Whereas the Hon. Merton E. Lewis has introduced a bill in the Senate of the State of New York, known as Senate bill No. 380. "The object of this bill is to avoid in certain cases what is known as assumption of risk" by the employe.

Therefore, be it resolved, That the members of Red Jacket Lodge No. 85, Brotherhood of Locomotive Firemen, in meeting assembled, do hereby request our Senators and Assemblymen from this county to do all in their power to assist Senator Lewis in securing the passage of this bill.

Yours respectfully,
W. F. COE,
Secretary.

[SEAL.]

WHITEHALL, N. Y., March 6, 1905.

Mr. R. E. Quirk, Chairman N. Y. S. L. B.:

DEAR SIR AND BROTHER.—At a regular meeting of Saratoga Lodge No. 209, B. of L. F., the following resolution was unanimously adopted:

WHEREAS, The Hon. Senator Lewis of Rochester, N. Y., has introduced in the Senate of the State of New York what is known as Senate bill No. 380. The object of this bill is to avoid in certain cases what is known as the assumption of risk by the employe.

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*Continued from July, 1905, Magazine.

Therefore, be it resolved, That we, the members of the Brotherhood of Locomotive Firemen in meeting assembled, do hereby request our Senator and Assemblyman from this district to do all in their power to assist Senator Lewis in securing the passage of above-named bill.

Resolved, That a copy of this resolution be sent to our Senator and Assemblyman, and to Senator Lewis, also to the Chairman of our Legislative Board.

ARTHUR GOODRICH,
Master.
THOS. WHALEN,
Secretary.

ALBANY, N. Y., February 1, 1905.

To the Officers and Members of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Inclosed find Senate bill No. 126, introduced by Mr. Lewis. This bill is similar to the one introduced by the above-named gentleman the past two years, known as the Compulsory Arbitration bill, and has been opposed by the Workingmen's Federation, the B. of R. T., and our organization.

Trusting that your lodge will take prompt action on this bill and advise us of same,

We remain yours fraternally,
R. E. QUIRK,
Chairman.
THOMAS E. RYAN,
Secretary.
[SEAL.]

Note.—The above-mentioned bill died in committee. No hearing set or held. Further comments on this act are unnecessary.

ALBANY, N. Y., February 9, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Inclosed find Senate bills Nos. 300 and 301, introduced by Mr. Marks.

Trusting your lodge will take prompt action on the inclosed bills, and advise us of the same, we remain,

Fraternally yours,
R. E. QUIRK,
Chairman.
THOMAS E. RYAN,
Secretary.
[SEAL.]

Note.—The above-mentioned acts affecting New York "L" and Subway lines died in committee.

ALBANY, N. Y., March 4, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Inclosed find Assembly bill No. 657, an act to amend section 603 of the Code of Civil Procedure, relating to injunctions.

This is one of the measures we were instructed to have introduced.

Also inclosed find Assembly bills Nos. 734 and 810. Kindly advise us of the action of your lodge on these bills.

Fraternally yours,
R. E. QUIRK,
Chairman.
THOMAS E. RYAN,
Secretary.
[SEAL.]

Under date of February 16th, we mentioned the fact that we had our Boiler Inspection bill introduced; that the Engineers' Committee had asked us to have an amendment to the same; that we were waiting for said amendment; that if we found it would improve the bill we would accept it.

On February 14th Senator Barnes introduced our bill in the Senate. On March 10th Assemblyman Bedell introduced a Boiler Inspection bill in the Assembly by request of the B. of L. E. After several conferences between your Chairman and the engineers, and after presenting the matter to our attorneys we agreed upon a compromise act which was substituted in committee for both the other bills. Mr. Rudd and Mr. Stanchfield, representing New York Central and Erie, appeared at this stage, opposing the substitute bill. There was no apparent opposition to this substitute in the Assembly, and it passed said body. When introduced in the Senate the opposition did develop in shape of the gentlemen mentioned, and at the hearing set for said bill in Senate Railroad Committee they appeared in opposition to it. Also Mr. Mitchell, Superintendent of Motive Power of the Lehigh Valley railroad. After the hearing amendments were suggested to us by Mr. Rudd and Mr. Stanchfield which we could not accept, and it was reported out without amendments, and the opposition was carried to the floor of the Senate. Senator Goodsell moved to lay the bill aside, which motion was carried. At our request Senator Marks moved to reconsider this action, and we give herewith the roll-call showing those who were with or against us.

The motion to reconsider was carried and the bill was put on final passage, and it passed the Senate and is now before the Governor.

On the motion to reconsider, the following is the roll-call:

Affirmative—Mr. Brackett, Mr. Brown, Mr. Cassidy, Mr. Cobb, Mr. Coggeshall, Mr. Cooper, Mr. Cullen, Mr. Davis, Mr. Dooling, Mr. Gates, Mr. Grady, Mr. Hinman, Mr. Keenan, Mr. Lewis, Mr. Malby, Mr. Marks, Mr. Martin, Mr. Raines, Mr. Saxe, Mr. Tully, Mr. Wilcox.

Negative—Mr. Ambler, Mr. Armstrong, Mr. Burr, Mr. Carpenter, Mr. Cordts, Mr. Fancher, Mr. Fechter, Mr. Fitzgerald, Mr. Foley, Mr. Frawley, Mr. Gardner, Mr. Goodsell, Mr. Hasenflug, Mr. Hawkins, Mr. Kehoe, Mr. L'Hommedieu, Mr. McCarren, Mr. Riordan.

Motion to reconsider the vote by which the boiler inspection bill was laid aside.

ALBANY, N. Y., April 7, 1905.

DEAR SENATOR.—We wish to call your attention to Assembly bill No. 1273, introduced by Mr. Bedell, and now in Senate Committee on Railroads.

This bill is advocated by the combined train service organizations of the State, and we respectfully request your support for the measure, which we are agreed is in the interest of public safety and for the good of all concerned.

May we not expect your hearty support when the bill reaches the Senate Calendar?

(Signed.)
A. W. YOUNG,
For the B. of L. E.
R. E. QUIRK,
For the B. of L. F.
P. J. HAYES,
For the B. of R. T.

ALBANY, N. Y., March 15, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Inclosed find Assembly bill No. 1273, introduced in the Assembly by Mr. Bedell, and in the Senate by Mr. Barnes.

You will recollect that on February 16th we informed you that we had introduced a bill for the proper inspection of locomotive boilers, which the representative of the Brotherhood of Locomotive Engineers asked to have amended. After having several bills drafted, we have compromised on the enclosed bill.

Trusting you will take prompt action on this bill, and advise us of the same,

I am fraternally yours,
THOMAS E. RYAN,
Secretary L. B.

ALBANY, N. Y., April 17, 1905.

To the Honorable, the Railroad Committee of the Senate:

GENTLEMEN.—Referring to the proposed amendments to Assembly bill No. 1273 (locomotive boiler inspection), submitted by the railroad corporation attorneys, we wish to say frankly that we can not accept them as they will entirely destroy the usefulness of the proposed law. Referring to the question of penalty, as raised by Mr. Stanchfield, after a careful survey of the language of the present bill, we are unable to see how that part can be misconstrued. The section reads that the person making the inspection "shall make and subscribe his name to a written or printed certificate" * * * "and the making and filing of a false certificate shall be a misdemeanor." We are utterly unable to see how this language can be misconstrued or how the two sentences can be divorced; surely, if a person not an inspector should make and file such a certificate, without an inspection, the extreme penalty for a misdemeanor would be little enough for such an act. The proposed amendments are so constructed that there is no penalty attached to the corporation for continuing in use an unsafe boiler, but says the inspector is to be liable to a penalty of $100 per day for such use; well, if it were not so serious a matter the proposition would be laughable; an inspector would have no more to say about the use of the boiler than any gentleman on the committee.

What is known on all railroads as "boiler inspection" and "hydrostatic tests" are very different and separate matters, and we have taken great pains to separate them in this bill, that no serious delays or results might come from the law.

Inspection of stay-bolts has nothing to do with hydrostatic tests, neither is inspection of stay-bolts all that is included in what is known as boiler inspection; the safety-valves, steam gauges, boiler checks, etc., are included in the monthly inspection, and we contend that our bill, from the practical standpoint, just covers the matter and is an exceptionally good, *working law*.

As to Sec. 2. "State inspector."—The

proposition that the Board of Railroad Commissioners may not make an inspection except at such times as the railroad corporation shall fix is simply ridiculous; the bill gives the inspector no authority except by direction of the Commission. We are sure that is sufficient limitation if there is any necessity for this bill, and we contend that there is great need for it.

Therefore, gentlemen, we earnestly request that you report this bill and help us to place it upon the statute books.

Sincerely yours,
P. J. HAYES,
Brotherhood of Railroad Trainmen.
R. E. QUIRK,
Brotherhood of Locomotive Firemen.
A. W. YOUNG,
Brotherhood of Locomotive Engineers.

ALBANY, N. Y., May 4, 1905.

His Excellency, the Governor, Executive Chamber, Albany, N. Y.:

DEAR SIR.—Representing and speaking for the men who operate the locomotives used upon the great railway systems of our Empire State, we desire to direct your special attention to Assembly bill No. 1273, introduced in Assembly, March 10th, by Mr. Bedell, passed by both Houses and now before Your Excellency awaiting your action.

This bill is advocated by the combined train service organizations of the State, engineers, firemen and trainmen, and was inspired by the frequency of locomotive boiler explosions the past few years and the conditions of many engine boilers now in use, which we believe renders it absolutely necessary that some general State supervision should be established.

The bill was drawn from the practical standpoint of the operation of the locomotives and by practical men, a great effort being made to eliminate anything that would handicap any railroad company who took care of their boilers. The engineers and firemen back of this bill have many of them been in active service, as such, for from twenty-five to forty years, and ask for this measure, not only for their protection and that of the other employes, but as a measure of public safety as well. In the name of the several organizations before mentioned, we most earnestly pray that you will give this enactment of the Legislature your approval.

Should there be opposition from any source we desire that you will give us the honor of a hearing.

Believe us to be,
Most sincerely yours,
A. W. YOUNG,
Brotherhood of Locomotive Engineers.
R. E. QUIRK,
Brotherhood of Locomotive Firemen.
P. J. HAYES,
Brotherhood of Railroad Trainmen.

Note.—This bill has since been signed by the Governor and is now a law.

ALBANY, N. Y., March 15, 1905.

To the Officers, Members, and Legislative Representatives of Lodges 149, 155, and 291, Brotherhood of Locomotive Firemen:

DEAR SIRS AND BROTHERS.—Enclosed find Senate bill No. 747, introduced by Mr. Grady, "An act requiring the licensing of motormen and conductors on electric trains or cars in cities containing two or more counties."

Please advise at once, what action you wish taken on this bill.

Yours fraternally,
THOMAS E. RYAN,
Secretary L. B.

Note.—The above-mentioned bill died in committee.

(To be continued in September Magazine.)

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Miscellany

Some Facts About Canada.

July 1st, called "Dominion Day," is Canada's national holiday, observed in the celebration of the confederation or unity of the Provinces of Ontario, Quebec, Nova Scotia, New Brunswick, Manitoba, British Columbia and Prince Edward Island. The Toronto Globe of that date says it "is a good day for Canadians who have been so busy at their own individual tasks lately that they have had no time to study the general advancement of their country to brush up their knowledge in that regard." The Globe then gives extracts from a pamphlet entitled, "One Thousand Facts About Canada," and which, unless specifically stated, are for the fiscal year ending June 30, 1904, which demonstrate the great progress which that country has been making, and are as follows:

Canada contains one-third of the area of the British Empire.

Canada's proportion of population is only 1.5 to a square mile.

England has 558 and the United States 21 to a square mile.

Canada has nearly a million square miles of practically unexplored area.

Canada is bounded by three oceans.

Canada's sea coast line equals half the circumference of the earth.

Canada has 13,000 miles of coast line—7,000 being in British Columbia.

Canada is 3,500 miles wide and 1,400 miles deep.

Canada is larger in area than the United States, as large as 30 United Kingdoms and as large as 18 Germanys.

Canada is larger than Australasia.

Canada's four organized territories are larger than France and Germany.

Canada's three northern districts of Mackenzie, Ungava and Franklin are larger than China (proper).

Canada has a continuous waterway of 2,384 miles from the mouth of the St. Lawrence to the head of Lake Superior.

The Mackenzie River is, with its tributaries, 2,500 miles long—equal to the distance from Liverpool to Halifax.

Canada has 6,000 miles of waterways from the St. Lawrence to the Mackenzie, with only 150 miles of a land break.

Victoria City is half-way between London and Hong Kong.

The two new Provinces of Saskatchewan and Alberta will have 275,000 square miles each.

The Yukon District is almost as large as France.

The boundary line between Canada and the United States is 3,000 miles long—1,600 by land, 1,400 through water.

Canada's population by the first census of 1665 was 3,251.

Canada's population at confederation, 1867, 3,500,000.

Canada's population, 1901, 5,371,315.

Canada's population, estimated, on June 30, 1904, 5,604,328.

Canada began the twentieth century with the same population as the United States began the nineteenth.

Canada has forty countries and nationalities represented in her population.

Canada has 132,101 more males than females.

Canada has more than one-half of the white population of all Britain's colonies.

Canada has enfranchised 25 per cent. of her population.

Canada has 87 per cent. of Canadian-born people—4,671,815.

Canada has 8 per cent. of British-born people—495,883.

Canada has therefore 95 per cent. of British-born subjects—5,077,698.

Canada's population is 74 per cent. rural, 26 per cent. urban.

Canada has 61 centres of 5,000 population and over, 31 of population of 10,000 and over.

(To be continued.)

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Book Review.

Basis of Railway Rates and Private vs. Governmental Management of Railroads: This is the title of a new book by Marshall M. Kirkman, and is one of the famous "Science of Railways" Series by the same author. It has been revised, rewritten and is just from the press.

The subject overshadowing all others in the public mind is the relation that exists between the Government and the railroads. The phase of the question presented with most prominence is rates. Shall they be made by the carriers freely, or shall the government place limitations upon the rate-making power, or shall it itself prescribe the charge made? The author in the introduction says:

What I have to say in reference to railway rates and governmental control is based on well known economic laws. Much has been said and written in regard to the railway problem. So far as rates are concerned there is no problem not known to every student of political economy. The same laws that govern manufacturers and traders govern railways. It has been claimed the making of rates invites the special intervention of the Government. The truth is that air and water do not adjust themselves more naturally than the rates of railways adjust themselves to the vicissitudes of trade. If there are exceptions the evil contains its own cure and so does not invite statutory enactments.

While it is impossible that the economic principles governing railway rates, as herein explained—perhaps at too great length—can be successfully controverted, nevertheless I beg to anticipate what is said in another part of this volume in regard to the specific reductions that have been made by the railroads of the United States operating under such laws, i. e., without governmental interference or restraint of any kind. Thus, the railways of America have, "without intervention, voluntarily reduced the rate per ton per mile charged in 1863 from 3.642 cents to .763 cents in 1903, a reduction amounting (on the basis of the business for 1903) to the enormous sum annually of $4,987,040,622.21. The relative importance of this gain to the community as compared with the income derived by the owners of railroads from their properties may be illustrated by the following exhibit: Thus the Interstate Commerce Commission, in its report for June 30, 1903, gives the cost of 94.4 per cent. of the mileage of the railroads of the United States as $10,973,504,903. Estimating the cost of the balance at the same relative value, the total cost amounts to $11,624,475,533.

"It appears from the foregoing that the public received a dividend in 1903, in the shape of reduced rates (as compared with 1863), equal to 42.90 per cent. of the total cost of the railroads of the United States. The owners of the railroads, on the other hand, because of the reduction they had made in rates, received in the way of interest on bonds and dividends, a return of only 3.74 per cent. on the total cost of their property, a return on capital invested that no manufacturer, business man, merchant or banker would consider adequate.

"As every railway company naturally and properly seeks to maintain rates, the foregoing shows how futile are their efforts when conditions are adverse. Rates are governed by natural laws, by economic conditions, the same as the price of breadstuffs, and the railroad companies must of necessity adjust themselves thereto. If there are perversions of this economic law, they are exceptions, and as one to a million compared to the value to the internal commerce of the country of leaving the railroads untrammeled—except in this, that they shall not discriminate between shippers; shall not give special rates nor allow rebates, and shall publish and post their tariffs, as the Government requires."

This volume treats fully these subjects in all their ramifications. It explains the economic and basic theory of railway rates and the natural laws that govern them. It treats of private versus governmental control; of railway growth; of the legal status of railways; the basis of tariffs; discrimination; the influences that determine the charges of carriers; the nature and extent of competition; pooling; and the peculiarities of governmental supervision.

A new and very interesting chapter in the book is devoted to the use of private (commercial) cars on railroads, and other economic questions of public interest.

The book contains over 300 pages, besides an appendix, is nicely bound in cloth, and sells for $2.50. It is published by the World Railway Publishing Company, Chicago, Ill.

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The Yosemite Valley.

The Southern Pacific Railway Company has just published a handsome 32-page booklet descriptive of the Yosemite Valley, California. The book is handsomely and profusely illustrated, showing many wonderful scenes from nature, and the descriptive matter is thrilling and interesting. A copy will be sent to any address upon receipt of five cents. Requests should be addressed to Advertising Bureau, Southern Pacific, 907 Merchants' Exchange Building, San Francisco, Cal.

BROTHERHOOD OF

LOCOMOTIVE FIREMEN'S MAGAZINE

BROTHERHOOD DEPARTMENT

Sign All Communications.

A standing notice is maintained in the "Correspondence" department of the Magazine stating that all letters or communications intended for publication must bear the signature of the writer, and that no attention will be given to any communication not so signed. Notwithstanding this, letters still reach the Magazine office containing matter for publication, signed "Member," or with some initials, or bearing no signature of any kind. These letters are no doubt without exception written in good faith. Frequently they contain questions which it is sought to have answered through the Magazine, and which would be given prompt attention if received in a letter properly signed. Please sign every communication addressed to the Magazine. Letters without the name of the writer will be given no attention whatever. If you want your name withheld from publication, just state so, and your wish will be complied with.

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Grand Union Meeting, Toronto, Ontario.

All is now in readiness for the GRAND UNION MEETING to be held in Toronto on August 8, 9, 10, 1905, to attend which a cordial invitation has been extended to all members of the Brotherhood throughout the United States, Canada and Mexico.

Arrangements have been made whereby our members may secure transportation over the Canadian Pacific and Grand Trunk Railways by making application for same through the proper officials of the roads on which they are employed.

The committee having the meeting in charge promises a most pleasant and interesting time to everybody attending. Let all go who can, and enjoy three of the pleasantest days of their lives.

The following is a copy of the official invitation and program, which gives a list of hotel rates and members of committees:

Brotherhood of Locomotive Firemen.

To the Officers and Members of All Lodges, and Ladies:

The Committee of the
CANADIAN
UNION MEETING,
to be held in
TORONTO, AUGUST 8, 9, 10, 1905,
extend to you this invitation
to attend.

W. J. Brent, Chairman.
James Pratt, Secretary.

Program.

FIRST DAY.

Secret Meeting morning and afternoon. Open Meeting in the evening.

SECOND DAY.

Secret Meeting in the morning. Afternoon, trip to Centre Island. Evening, Moonlight on the Lake.

THIRD DAY.

Secret Meeting in the morning. Afternoon, trip around the city. Evening. Grand Complimentary Ball and Supper.

There will also be meetings of the Ladies Society, dates and time of which will be in hand program with which you will be supplied.

GEO. E. CROWHURST,
Chairman Entertainment Committee.

Hotel Rates.

Rossin House, corner York and King streets, $2.00 per day, two in a room, special rate.

Walker House, corner York and Front streets, $2.00 per day special rate.

Palmer House, first and second floors $2.00 per day, third and fourth floors $1.50 per day, special rate, American plan only.

The Tremont, 163 Yonge street, American plan $1.50 and $2.00 per day, European plan 75 cents per day up.

Scholes Hotel, 203 Yonge street, 50 and 75 cents per day, European plan.

Hotel Restaurant, 30 King street, West, European plan, gents only, 75 cents and $1.00 per day.

The New Russell, 217 Yonge street, $1.50 per day, American plan.

Richardson House, corner King and Spadina avenue, two in a room, $1.25 per day.

Power House, corner King and Spadina avenue, $1.25 per day, two or more in a room.

Union House, corner Simcoe street, adjoining Union Station, $1.00 and $1.25 per day, special rate.

The Iroquois, $2.00 and $2.50 per day, corner King and York streets.

Arlington Hotel, $2.00 per day, King street, West.

The Grand Union, American Plan $2.00 and $3.00 per day; European plan $1.00 and $1.50 per day.

Imperial Hotel, corner King and York streets, eight rooms at 75 cents single, $1.00 double; four rooms at $1.00 single, $1.25 double; two rooms at $1.25 single, and $1.50 double.

Grosvenor House, corner Yonge and Alexander streets, 75 cents single, $1.50 double, European plan.

COMMITTEE OF ARRANGEMENTS.

Lodge 67.—W. J. Brent, T. H. Dunn, W. F. Linahan, G. E. Crowhurst, C. W. Edward, G. L. Hutton, F. B. Sowrey, James Pratt.

Lodge 262.—W. Quinn, J. Lillew, E. Raybould, G. K. Wark, F. W. Reeves, M. D. McTaggart, H. Butcher, J. Millward.

Lodge 596.—W. E. Westlake, F. Rine, F. A. Pinkston, Robt. Reid, T. Davidson, Jas. Sands, H. Schaefer, A. H. McIntyre.

Maple Leaf Lodge 161.—Ladies Society Committee.—Mrs. George Ritchie, Miss Nellie Quinn, Mrs. Geo. Halloway, Mrs. Mary Morrison, Mrs. Jessie M. Monck.

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Official Circular No. 7, 1904-1905.

OFFICE OF GRAND MASTER,
PEORIA, ILL., July, 1905.

To All Subordinate Lodges:

Sirs and Brothers—I herewith submit a report of the Vice Grand Masters for the quarter ending June 30, 1905:

First Vice Grand Master C. A. Wilson.

APRIL, 1905.

Lodges visited: No. 291, Brooklyn, N. Y.; No. 48, Peoria, Ill. Worked eleven days with Joint Protective Board of Grand Central Station and Harlem Line; one day with Joint Protective Board of Southern Railway; two days with Joint Protective Board of Chicago, Cincinnati and Louisville Railway; seventeen days at Grand Lodge office. The entire month of April was consumed by Bro. Wilson in the capacity of Acting Grand Master.

MAY, 1905.

Lodges visited: No. 405, Peru, Ind.: No. 157, Peru, Ind.; No. 424, Covington, Ky.; No. 375, Dayton, O., two days; worked three days in interest of defunct lodge No. 239, Columbus, O.; No. 1, Port Jervis, N. Y., two meetings.

Worked fourteen days with Joint Protective Board of Chicago, Cincinnati and Louisville Railway. Organized and worked three days in interest of Lodge No. 680, Stroudsburg, Pa. Worked three days at office of Grand Lodge.

Conducted examinations for total disability of Bro. E. E. Schrock, member of Lodge No. 52, Logansport, Ind., and Bro. B. D. Crosier, member of Lodge No. 1, Port Jervis, N. Y.

JUNE, 1905.

Lodges visited: No. 169, Hornellsville, N. Y.; No. 12, Buffalo, N. Y.; No. 276, Sloan, N. Y.; No. 101, Buffalo, N. Y.; No. 85, Buffalo, N. Y.; No. 362, Niagara Falls, N. Y.; No. 174 and No. 673, Harrisburg, Pa.; No. 252, Columbia, Pa.; No. 1, Port Jervis, N. Y.

Worked thirteen days in interest of Buffalo and Susquehanna Joint Protective Board; four days in interest of N. Y.

C. & H. R. R. Joint Protective Board, and one day with Western Maryland Joint Protective Board.

Conducted examinations for disability claims of Bro. I. J. Sawyer, member of Lodge No. 169, and Bro. Albert Simmons. of Lodge No. 208, Susquehanna, Pa.

Second Vice Grand Master Timothy Shea.

APRIL, 1905.

Lodges visited: No. 289, Chattanooga, Tenn; No. 439, Birmingham, Ala.; and worked one day in interest of No. 439; joint meeting with Nos. 439 and 426, Avondale, Ala.; No. 604, Amory, Miss.; joint meeting with Nos. 200 and 655, Meridian, Miss.; No. 460, Vicksburg, Miss.; No. 609, Minden, La.; No. 522, Shreveport, La.; No. 598, Mer Rouge, La.; No. 653, Lafayette, La.

Worked seven days with Joint Protective Board of W. & A. Ry., and three days with Joint Protective Board of Southern Railway.

Conducted examinations for total disability of Bro. L. H. Cox, of Lodge No. 289, Chattanooga, Tenn., and Howlett Caradine, member of Lodge No. 201, Jackson, Tenn.

MAY, 1905.

Lodges visited: No. 435, Crewe, Va.; No. 76, Norfolk, Va.; No. 182, Roanoke, Va.; No. 665, East Radford, Va.; No. 446, Bluefield, W. Va.; No. 626, Spencer, N. C.; No. 455, Asheville, N. C.; No. 343, Greenville, S. C.; No. 427. Columbia, S. C.; No. 186, Charleston, S. C.; one day in interest of No. 583, Columbus, Ohio.

Organized Lodge No. 675, Huntington, W. Va.

Worked ten days with Joint Protective Board of Southern Railway; one day with Joint Protective Board C. & O. Ry. Two days at Washington, D. C., meeting Grand Master.

Conducted examination for total disability of Bro. John Simmons, member of Lodge 446.

JUNE, 1905.

Lodges visited: No. 332, Augusta, Ga.; No. 246, Macon, Ga.; No. 247, Atlanta, Ga.; No. 201, Jackson, Tenn.; No. 200, Meridian, Miss.; No. 655, two meetings, Meridian Miss.; No. 572, Hattiesburg, Miss.; No. 89, two meetings, Selma, Ala.; No. 258, two meetings, Montgomery, Ala.; No. 581, two meetings, Columbus, Ga.; No. 247, Atlanta, Ga.; No. 289, two meetings, Chattanooga, Tenn; No. 279, Tuscumbia, Ala.; No. 444, two meetings, Knoxville, Tenn.; No. 403, two meetings, Pinners Point, Va.; Nos. 497 and 615, Richmond, Va.

Worked four days in interest Joint Protective Board W. & A. Div., N. C. & St. L. Ry.

Third Vice Grand Master C. W. Maier.

APRIL, 1905.

Lodges visited: No. 313, Kansas City, Kas:; No. 24, Parson, Kas.; Nos. 21, 109, 390, 414 and 481, St. Louis, Mo.; No. 54, Moberly, Mo.; No. 153, Ft. Scott, Kas.; No. 489, Pittsburg, Kas.; No. 529, Mena, Ark.; No. 440, Monett, Mo.; No. 389, Chillicothe, Mo.; No. 298, Argentine, Kas.; No. 489, Pittsburg, Kas.; No. 337, Kansas City, Mo.

Conducted examinations for disability of Bros. L. A. Kloffke, of Lodge No. 17, and H. C. Simpson, of Lodge No. 190.

Worked one day in interest of Joint Protective Board G. C. & S. F. Ry., and one day in interest of Rock Island Joint Protective Board.

MAY, 1905.

Lodges visited: No. 355, Joliet, Ill.; No. 39, Rock Island, Ill., three meetings; No. 249, Valley Junction, Ia.; No. 634, Brookfield, Mo.; No. 226, Ennis, Tex.; No. 506, Houston, Tex.; No. 590, Beaumont, Tex.; No. 677, Silsbee, Tex.; No. 146, Houston, Tex.; No. 551, Little Rock, Ark.; No. 676, Cotter, Ark.

Organized Lodge No. 676, Cotter, Ark., and No. 677, Silsbee, Tex.

Worked two days in interest of Joint Protective Board Gould Southwest System, and two days in interest Joint Protective Board K. C. S. Ry.

JUNE, 1905.

Lodges visited: No. 372, Big Springs, Tex.; Nos. 135 and 664, El Paso, Tex.; No. 94, Tucson, Ariz.; No. 314, San Bernardino, Cal.; No. 663, Los Angeles, Cal.; No. 386, San Diego, Cal.; No. 97, Los Angeles, Cal.; No. 139, Kern, Cal.; No. 566, Fresno, Cal.; No. 91, San Francisco, Cal.; No. 143, two meetings, San Francisco, Cal.; No. 265, Sacramento, Cal.; No. 58, Rocklin, Cal.; No. 19, Sparks, Nev.; No. 607, Carlin, Nev.; No. 98, Ogden, Utah; No. 178 and No. 670, Salt Lake City, Utah.

Organized No. 678, San Rafael, Cal.;

No. 239, Eureka, Cal.; No. 679, Black Rock, Utah.

Conducted examinations for disability of Bro. T. J. Carter, of Lodge No. 372, Big Springs, Tex.; R. B. Henderson, of Lodge No. 622, Jefferson City, Mo.; M. C. Peterson, of Lodge No. 34, Clinton, Ia.

Fourth Vice Grand Master E. A. Ball.

APRIL, 1905.

Lodges visited: No. 307, Springfield, Mass.; No. 563, Merrick, Mass.; No. 478, Providence, R. I., and worked four days in interest of No. 478; No. 474, Taunton, Mass.; No. 285, Hartford, Conn.; No. 493, Danbury, Conn.; No. 365, Bellows Falls, Vt.; No. 353, Rutland, Vt.; No. 586, Port Huron, Ont., two meetings; No. 420, Owosso, Mich.; No. 286, Saginaw, Mich.

Worked two days in interest of legislative matters, and three days with Joint Protective Board of T. H. & B. Ry.

MAY, 1905.

Lodges visited: No. 412, Fond du Lac, Wis.; No. 597, Winnipeg, Man., two meetings; No. 127, Winnipeg, Man.; No. 292, East Grand Forks, Minn.; No. 443, Staples, Minn.; No. 636, Brainerd, Minn.; No. 358, West St. Paul, Minn.

Worked fourteen days with Joint Protective Board of the C. N. Ry.

Conducted examination for total disability of Bro. W. P. Quinn, of Lodge No. 412.

JUNE, 1905.

Lodges visited: No. 658, Clarion, Ia.; No. 547, Oelwein, Ia.; No. 565, St. Joseph, Mo.; No. 102, Des Moines, Ia.; No. 322, Dubuque, Ia.; No. 2, two meetings, Chicago, Ill.; No. 38, Stratford, Ont.; No. 129, two meetings, Escanaba, Mich.; No. 494, Gladstone, Mich.; No. 420, two meetings, Owosso, Mich.

Worked eight days in interest of Joint Protective Board of Grand Trunk Railway.

Conducted examinations for disability claims of Bros. Wm. J. Houghton, member of Lodge No. 129, Escanaba, Mich.; M. M. Miller, of Lodge No. 158, Detroit, Mich., and Edward Walker, of Lodge No. 262, Toronto, Ont.

B. of L. F. Members Joining a Sister Organization.

Numerous inquiries have come to this office from members of our Order who have joined a sister organization at the earnest solicitation of the members of the latter, as to whether or not they can be expelled therefrom in the event they fail to withdraw from the Brotherhood of Locomotive Firemen within a period of ninety days or some other time.

On account of this question being of such a nature that a discussion of it might in some way give offense to those with whom we desire to be on the most friendly relations, we have long hesitated to treat upon it; but owing to the fact that so many of our members have, or are seeking our advice on the subject, and owing to the fact that they are only inquiring as to what are their legal rights in the premises, we feel assured that no one can justly complain of the ones seeking advice under such circumstances, nor take offense at those who may give it, because the law of the land is higher than the law of any fraternal society, and certainly no fraternal society or its officers will knowingly enforce a law of their organization which deprives members of rights which the law of the land gives them. So, with a view of correctly ad-

Summary of Work by Months, Quarter Ending June 30, 1905.

	Wilson.			Shea.			Maier.			Ball.			
	April.	May.	June.	April.	May.	June.	April.	May.	June.	April.	May.	June.	Total.
Lodges visited	2	6	10	12	11	17	15	13	23	11	8	12	138
Secret meetings	2	7	10	11	12	22	13	13	23	12	9	12	146
Addressed and instructed	30	155	313	169	026	350	175	266	377	147	155	121	2,361
Applicants initiated		6	2	5	43	11	10	....	....	7		7	91
Lodges organized	....	1	....	....	1	....	....	2	3	....	....	....	7
Public meetings	....	....	1	....	....	1	6	....		....	....	....	8
Miles traveled	1,665	1,420	2,017	3,389	2,962	2,867	3,888	3,750	5,820	1,818	2,858	3,076	35,530

vising our members, we have had the question carefully considered by the Legal Department, and have been advised that Section 27 of the Constitution of the sister organization referred to is wholly insufficient and incapable of being construed so as to warrant or empower any division or officer of the sister organization to expel a member therefrom because he will not sever his connection with the Brotherhood of Locomotive Firemen, within ninety days or any other given time. An expulsion of this kind attempted or actually carried out would be absolutely illegal and void, and all that is necessary to do is for the person said to be expelled to tender his dues and assessments regularly, and if they are refused the fact of the tender will keep him in good standing, and should any event happen which would make him or his beneficiaries entitled to the insurance, it could be collected just the same as if no expulsion or attempted expulsion had ever taken place. However, a member does not need to wait until some event makes his insurance payable; he has a right to resort to the courts to reinstate himself immediately upon the attempted expulsion, and since he is seeking but a right the law affords him, the Brotherhood stands ready to assist him in obtaining and enforcing this right, and with this end in view, upon application of a member, the Brotherhood will take up his case and institute the proper proceedings in his behalf. We feel assured that when we only work to the end that our members shall enjoy fully the privileges that the law affords them, that we are not antagonizing any sister organization—and to refrain from assisting our members in what they are clearly entitled to enjoy under the law of the land would be moral cowardice on the part of the organization.

It is not necessary to go into details either as to the legal questions involved, or to discuss the injustice which we are seeking to protect our members against, as all of these things will be fully gone into when a proper case is submitted to us.

Special Notice.

I desire especially to call attention of the members of all lodges to the amendment to Section 154, enacted at the last convention, and which appears in "italics" in the present Constitution. Under the old section it was obligatory upon the Grand Secretary and Treasurer to bond the treasurers of all subordinate lodges, collecting the expense of same from the lodges. The last convention enacted the amendment above referred to, which is quoted as follows:

> "Before entering upon his (treasurer's) duties, he shall furnish a bond, either personal or in some reliable surety company, conditional upon the faithful discharge of his duties, in such sum as the lodge may direct, a copy of which shall be immediately filed with the Grand Secretary and Treasurer."

The last convention enacted the above amendment to Section 154 of the Constitution, which makes it necessary for the local lodge, instead of the Grand Secretary and Treasurer, to bond all treasurers. (See page 14 of the proceedings of the twelfth day of the Ninth Biennial Convention.)

The Magazine Department.

I desire to again urge upon our members the importance of putting forth an effort to increase the subscription list of our Magazine. It is not necessary for me to dwell upon the standing of the publication, as it speaks for itself to those who are familiar with the topics covered by it, and if each of our 55,287 members will secure just one subscriber, the revenue derived would go far towards defraying the running expenses of the organization. In addition to making it a source of revenue to the organization, the Editor and Manager is offering valuable prizes to those securing new subscriptions, the particulars concerning which are set forth in each issue of the Magazine, thereby making it a personal inducement, as well as a benefit to the organization, and I would request that our members render him all of the assistance possible.

Classification of Members.

Enclosed herewith is a blank form, which Secretaries will please fill out, showing the exact number of members in their respective lodges employed as engineers, firemen, hostlers, etc., and file with this office. A careful enumeration is necessary in order that a correct count may be made.

Joint Protective Boards.

Request is hereby made that the Secretaries of all Joint Protective Boards immediately supply the Grand Master with a copy of the schedule under which they are working at the present, in order that there may be kept a complete file of the same in the Grand Lodge office. This is important, and whenever a new schedule goes into effect a copy of the same should be sent to this office for reference.

Condition of the Brotherhood.

In reviewing the business of the fiscal year just closed, the records show a very gratifying increase in membership, as well as a phenomenal increase in the financial transactions.

On June 30, 1905, the records show by actual count a membership of 55,287. There are now 680 lodges in good working order, and as an evidence of the continued growth of the Brotherhood in so far as increased membership is concerned and the increase in volume of financial business transacted, we submit the following table of statistics for a period covering the past ten years, which we feel will be of interest to subordinate lodges and to the membership:

Fiscal Year.	Receipts of Grand Lodge in All Funds.	Amount Paid Disabled Members and Beneficiaries of Deceased Members.	Number of Members at Close of Fiscal Year.
1895-96	$387,368 53	$319,584 00	22,461
1896-97	417,026 71	313,924 00	24,251
1897-98	435,421 35	338,000 00	27,039
1898-99	492,053 70	424,900 00	30,748
1899-1900	569,799 13	465,672 00	36,084
1900-01	743,794 14	553,150 00	39,072
1901-02	702,338 51	579,350 00	43,376
1902-03	787,465 28	616,600 00	48,568
1903-04	995,636 72	808,450 00	54,434
1904-05	1,106,016 86	810,250 00	55,287

Total paid to disabled members and beneficiaries of deceased members during the past ten years ...$5,229,880 00

From the foregoing it will be noted that all previous records have been broken during the fiscal year just closed, and I take this opportunity to congratulate our members on the excellent showing that they have made, which should go far to encourage us in our future work. Fraternally yours, J. J. Hannahan,

Attest: Grand Master.

W. S. Carter,

Grand Secretary and Treasurer.

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Sparks.

Lodge 172, of Ottawa, Ont., held its first annual picnic at Wakefield, Que. A member writes that while they didn't have as large a crowd as they should have liked, they came out ahead. The following brothers composed the committee having the arrangements for the picnic in charge: Bros. Lowe, G. Fraser, E. Ruddick, H. E. White, E. Ingram, J. Walsh, W. Biggs, T. Smyth, G. Yelland, J. Elliott, J. Fitzsimmons and R. Garland.

Read the advertisements and patronize our advertisers.

Brothers, have you availed yourself of the opportunity to secure one of those beautiful emblem rings offered as a premium for securing two subscriptions to the Magazine?

A good book to buy if you want to post up for examination is Bro. W. N. Breen's "Question Box of the Locomotive." It is advertised every month in the Magazine and will be of great value to any engineman.

The knife the Magazine is offering as a premium for two yearly subscriptions is certainly a "wonder." Any railroad man will find it to his advantage to have one in his possession. Why not try for one?

Can you solve the puzzle? A puzzle advertisement is published on the front inside cover page this month. Read it and see if you can work it out. Conditions are fully set forth in the advertisement.

Mr. and Mrs. Oscar Deo, parents of Bro. Elmer A. Deo, who recently died of smallpox, have written the Magazine thanking the brothers of Lodge 256, of which Bro. Deo was a member, for their kindness and devotion to their son at the time of his death and burial. They say that had it not been for them they would not have been permitted to bury their son at home. They speak highly of our Order and wish all the members of Lodge 256 to be assured of their sincere and heartfelt thanks.

Never stop reading your Magazine until you have read its advertisements. They are interesting and attractive, and they might save you money on some of your purchases.

The attention of the membership is directed to Section 47a of the Constitution which says: "It shall be the duty of every member to notify the Magazine Agent of his lodge or the Editor and

Manager direct of any change in his address or failure to receive his copies of the Magazine, and if such notice is not received by the Editor and Manager within thirty days, duplicate copies of missing numbers can not be supplied." Letters are still being received at the Magazine office conveying the information that the writers have not received their Magazine for some months, and requesting that back numbers be supplied. Upon investigating such complaints it is almost invariably discovered that the trouble is due to the fact that they have changed their address without notifying the Editor. A line or two on a postal card sent at the proper time will save all this trouble. When changing your address please notify the Editor promptly, so as to insure your receiving your Magazine without any interruption.

Bro. H. S. Peters, the manufacturer of the famous "Brotherhood" overalls, is reported as enjoying a most excellent increase in the sales of his goods this year. Bro. Peters has always been an energetic and earnest member of the Brotherhood, and he is just as tireless in his efforts to give the "boys" value for their money in the quality of the overalls he manufactures.

A large number of our members are now enjoying the possession of a beautiful emblem ring, which was obtained by securing two subscriptions to the Locomotive Firemen's Magazine.

Bro. T. J. Carter, an old time member of Lodge 372, feels very grateful to the Brotherhood for the payment of his disability claim and also for kindnesses extended to him. He states that he shall take pleasure in using his influence and assistance in promoting the growth of his lodge and the Order in general.

Be sure and read our "EXTRAORDINARY PREMIUM OFFER" in the advertising columns. Those who have secured these useful and beautiful articles are highly pleased with them. We are quite sure you would be also.

Your assistance in swelling the subscription list of the Magazine would be appreciated, and we know that you would appreciate the premiums offered. Don't fail to secure one or both premiums.

A 5-inch advertisement of Dr. T. H. Gilbert's famous tonic appears for the first time in this issue of our Magazine. Dr. Gilbert offers in his advertisement to give away 75,000 bottles of his medicine free, and those who are sufferers from the ailments he mentions should write to him for a trial bottle.

ATTENTION—Don't fail to read our "EXTRAORDINARY PREMIUM OFFER." It will be to your advantage to do so.

The emblem rings which are being offered as a premium for two yearly subscriptions are proving highly satisfactory. No doubt you would be pleased with one.

The seventh in the series of "Sargent Glove Talks," giving information relative to the "F. P. Sargent" Gloves, appears on the rear inside cover of this issue of the Magazine. This series of advertisements has been adopted by the Detroit Leather Specialty Company for bringing before our readers the merits of their gloves, and much valuable and interesting information concerning glove manufacture has been imparted.

The attention of our readers is called to the importance of requesting changes of address before it is too late to take effect with the following month's issue.

Anyone desiring to solicit subscriptions for the Magazine will be gladly furnished with subscription blanks, samples, etc., if they will kindly communicate with the Editor and Manager, John F. McNamee, Traction Terminal Building, Indianapolis, Ind.

All changes of address, in order to take effect with the issue of the month following, must reach the Magazine office on or before the eighteenth of the month.

If there is any trouble in the delivery of your Magazine owing to imperfect address or for any other reason, kindly notify the Editor and the matter will be given his immediate attention. A postal card is all that is necessary to do this.

Bro. Tom Roberts, of Lodge 175, Newark, Ohio, formerly a member of the Grand Executive Board of the Brotherhood of Locomotive Firemen, and for a number of years actively engaged in promoting the interests of the organization, has engaged in the manufacture of overalls. Tom's picture looks out from his advertisement, which appears for the first time in this month's Magazine, and indicates that he is "looking for business." Bro. Roberts can be relied upon to put up a good grade of overalls, and he proposes to give a suit free to any of our readers who will induce a dealer in any town where he is not already represented to put in a stock of his goods. That is a fair offer, and you should "get busy" ou it before some one gets ahead of you.

Don't fail to read the "EXTRAORDINARY PREMIUM OFFER" in the advertising columns. Others are securing these useful and beautiful articles—why not you?

Bon Ami comes as near being a necessity on an engine and in the household as any article that is advertised in the Magazine, and the nicest part of it is, it is constantly on sale at all grocery stores, so you can buy it without going to any trouble. Buy a cake of Bon Ami for scouring and polishing the next time you go to your grocery, and you will find it the best investment you ever made. Remember, it is advertised in our Magazine.

In notifying the Editor of your change of address please state, in addition to your new address: First, the number of your lodge; second, your former address; third, the office you hold, if any, in your Lodge or on your Local or Joint Protective Board.

The advertising of the Illinois Watch Company, recommending their "Bunn Special" and "Sangamo" watches, has been returned to the Magazine, after a short discontinuance. They want to sell these watches to the railroad men, and any watch that they sell will give excellent service.

The Buffalo Convention, with a view to facilitating the work of building up the subscription list of the Magazine, provided for the appointment of Magazine agents, as per Section 47a of the Constitution, which reads as follows: "It shall be the duty of the Master of each subordinate lodge to appoint a member of that lodge to act in the capacity of Magazine Agent therefor, and when more than one system of railway is represented in the membership of a lodge, additional Magazine Agents may be appointed for each system. It shall be the duty of the Magazine Agent to solicit subscriptions, receiving his commission therefor." So far comparatively few Magazine Agents have been appointed. It is to be hoped that the Masters of subordinate lodges will kindly comply with this provision of the Constitution in the near future so that the Magazine Agents will be in a position to co-operate with the Magazine in the effort to raise the subscription list to the highest possible figure before the next Convention.

More advertising has been published in the Magazine this year than during any other similar period in its history. Business men generally are beginning to realize the importance of bringing their goods to the attention of the vast army of consumers that is made up of the railroad men and their families. Large business concerns do not pay money for advertising space in our Magazine merely for the purpose of paying a compliment to our organization and its members. They are looking for business, and if you give them your patronage liberally we will have no difficulty in retaining them as our patrons. As a general rule our members can accord our advertisers all the support necessary by constantly reading the advertisements as they are published, and in giving our advertisers preference over others when buying those things which they daily require in the support of themselves and their families.

Please give the number of your Lodge —your old address—the office you hold, if any, in your Lodge or on your Local or Joint Protective Board, in addition to your new address, when sending in notification of your change of address.

If you are a member of a secret society, no better nor more serviceable emblem of that society can be constantly worn on your person than one of the handsome emblem rings advertised in our Magazine by the Devine Specialty Company, of Indianapolis, Ind. These rings are fully guaranteed as to lasting qualities, and the price is so low that no man exposed to the dangers of railroad life can afford to be without one of them. Their advertisement facing the back cover of this issue will interest you.

We are receiving many requests for changes of address after the eighteenth of the month, which makes it impossible for us to furnish copies of the following month's issue, the wrappers for that issue having already been addressed.

When sending notification of change of address be sure and give in addition to your new address, first, the number of your lodge: second, your former address and, third, the office you hold, if any, in your lodge or on your Local or Joint Protective Board.

Read the advertisements and write to the advertisers.

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Forum

Banquet by Lodge 477, B. of L. F.

On the evening of June 7, 1905, the members of the Joint Protective Board of the Burlington Railway System, who were en route to Chicago to take part in a meeting to be held in that city, in response to an invitation extended by Lodge 477, of Galesburg, Ill., stopped over at that point and took part in initiatory exercises given by the local lodge, after which all repaired to the banquet hall of the Union Hotel, where a most enjoyable evening was spent. The following is a complete list of those present:

John J. Hannahan, Grand Master, Peoria, Ill.; W. S. Carter, Grand Secretary and Treasurer, Peoria; A. H. Hawley, chairman of the Board of Grand Trustees, Davenport, Ia.; W. D. Watts, Grand Medical Examiner, Peoria; Hon. W. T. Irwin, Peoria; Chas. Burdick, Peoria; Richard Bradley, Peoria; Ed. Studer, private secretary of Grand Master, Peoria; D. J. Evans, local medical examiner, Galesburg; M. L. Houlihan, Master of Ceremonies, Galesburg; N. E. Allen, general chairman, Galesburg, toastmaster; W. S. Bixler, vice-chairman, Lodge No. 599, McCook, Neb.; J. S. Ford, Secretary and Treasurer No. 660, Aurora, Ill.; C. W. Reissig, local chairman, No. 196, Chicago; T. V. Flock, local chairman, No. 660, Aurora; W. C. McCormick, local chairman, No. 168, La Crosse, Wis.; W. K. Hess, No. 650, Beardstown, Ill.; O. A. Brouse, local chairman, No. 481, St. Louis, Mo.; A. G. Cookingham, local chairman, No. 290, Hannibal, Mo.; A. M. Deem, local chairman, No. 634, Brookfield, Mo.; F. L. Bradley, local chairman, No. 3, St. Joseph, Mo.; R. D. Collins, local chairman, No. 161, Burlington, Ia.; J. M. Barber, local chairman, No. 41, Ottumwa, Ia.; F. O. Paulus, local chairman, No. 640, Creston, Ia.; Otto Schultz, local chairman, No. 179, Lincoln, Neb.: Frank Armstrong, local chairman, No. 77, Denver, Col.; C. W. Tilletts, local chairman, No. 623, Alliance, Neb.; R. E. Tucker, local chairman, No. 624, Wymore, Neb.; R. V. Brown, local chairman, No. 632, Edgemont, S. D.; H. Wamsley, local chairman, No. 629, Deadwood, S. D.; H. Timmel, local chairman, No. 628, Sheridan, Wyo.; M. Larson, local chairman, No. 477, Galesburg.

Interesting addresses were given as follows:

BRO. N. C. ALLEN, Toastmaster: To the Grand Lodge officers and the distinguished guests and the brothers of 477, on behalf of the Brotherhood I desire to say that we appreciate very highly this great spread given us here this evening, and we would like to continue our work in this country in a manner that will be a credit to you and our organization. I wish to state that the Burlington System is looking forward to great results from you, and depending a great deal on the members of 477, which has the deserved reputation throughout the country of being a good, live, progressive and active lodge. I take pleasure in introducing a member of our organization, one who has retired from the scoop and has taken up something finer, the needle, as I understand it. The brother is in the tailoring business in Peoria, and all of you who want to have your overalls made to order should call on Bro. Bradley, who will now sing you a song.

BRO. BRADLEY: I take up the needle; gentlemen, I am a tailor in name only, and singing isn't the best thing I can do.

Bro. Bradley then sang the beautiful song, "Where the Sunset Turns the Ocean Blue to Gold," in a manner that was thoroughly appreciated.

Toastmaster Allen: It has been frequently stated of late that this is a day of extremes, and I believe I have in mind two very great extremes. A year ago next month I witnessed a little scene in a bedroom in Chicago that touched me deeply. If you remember, a year ago last month we were organized in Chicago, and under the instructions of our worthy Grand Master the committee called on Mr. Willard and asked him to recognize our Order on the Burlington System, and he did so, and he granted us concessions that we have been very grateful for. When we returned to this bedroom we found our Grand Master lying on his back, confined to his bed, and he raised up his hands and said: "Thank God that what I have been looking for for the past three years has at last come. You are recognized on the Burlington System, and I am glad to know it," and he turned his face from us to hide the tears that filled his eyes. And I think tonight it is the happiest moment of my life when I can stand before you and introduce to you the man who is behind it all, the organizer on the Burlington System, Grand Master John J. Hannahan.

Grand Master John J. Hannahan: Mr. Toastmaster, the Members of the Protective Board of the Chicago, Burlington and Quincy Railroad, our Associate Grand Officers and Friends—As the Grand Master of the Brotherhood of Locomotive Firemen, it affords me pleasure, greater than it is possible for me in words to express, to be here with you tonight at this gathering, and especially in the city of Galesburg. I regret that the officers of the Burlington Railway are not here, in order that they might have an opportunity to see what noble specimens of men they have in their employ in the engine service. Often I have heard your officials speak highly of you. They have seen you only in your overalls, your daily dress suit, night as well as day. Here you abandon your work for a few moments in order that you may sit at a banquet table and enjoy the association of each other, and welcome to your midst the representatives of the organization from one of the greatest systems of railroads that is in operation in the world. The Brotherhood of Locomotive Firemen was organized on the first day of December, 1873, thirty-two years ago. At that time there was a membership of eleven. On the 6th day of June, 1905, we find from the records at the Grand Lodge office that there are today recorded 55,195 names, every member in the organization in good standing, not a single delinquent member. I venture to say that there is no other organization, fraternal or otherwise, that can say its entire membership is in good standing and free from any financial obligations.

Now, then, in the beginning, when the organization was first established, it was not without a great deal of opposition. There is opposition today to organized labor, and in all probability will be until the end of time. It, however, remained for us to demonstrate beyond a doubt that our organization, instead of being established for the purpose of tearing down and destroying the interests on which we depend and those who depend upon us for their very existence, was organized to maintain the interests of our employers, as well as to protect our own interests. Year after year the opposition to our organization gradually faded away, and I can truthfully say to you tonight that with one single exception, on the 200,000 miles of railroad in the United States, with the exception of one line, the railroads are organized and members of our organization are employed in the operation of their engines. The managers that oppose our Brotherhood may, if permitted to remain in charge of the property, change their minds. But whether their minds be changed or not, the day is coming, as true as I stand in your presence tonight, gentlemen, when the Louisville and Nashville Railroad will be organized, and labor of our organization will be employed in the service as enginemen.

We have endeavored to be conservative, and in connection with this matter I want to congratulate the Protective Board on the Chicago, Burlington and Quincy Railroad for the excellent judgment that has been shown and exercised by the local Protective Boards of these systems. During the entire year of your organization there has not been a single complaint, not one has come to my office. You have adjusted your own grievances with your own officials, without the aid of the officials of the organization. That, in itself, gentlemen, speaks volumes for the men who are handling the grievances and looking after the interests of our men employed on your line. . . . .

I am satisfied that there will be no cause for a repetition of the trouble of 1888 on the Burlington Railroad, as long as the gentlemen who are now in charge of the management of the company are permitted to remain in office. And I wish to say tonight that the Brotherhood of Locomotive Firemen, I believe, have a warm and sincere friend of Dan Willard, who began himself in the roundhouse as a wiper, and for that reason is one of the ablest railroad officials that there is on the North American continent. Now, I said we were not organized to injure any one, but to protect ourselves. To substantiate these statements we find on an examination of the books at the Grand Lodge office that the organization since 1873 has paid in death and disability claims $8,764,015 to disabled members of the organization, and to widows and orphans. Of that amount, in the last year $13,500 has been paid to members of our organization employed on the C., B. & Q. Railroad. These figures which I quote tonight were taken from the records in Bro. Carter's office today, and are absolutely correct. Now, the organization has done more; it has brought together men of every nationality, men of, I will say, almost every belief, men who belong to the different political parties. We have organized and united them, and established a bond of friendship that is as lasting as life itself. We have organized the locomotive firemen of this country on the broad platform of common humanity. We have united them into the brotherhood of men, under the fatherhood of God, and no better work could be done by any church in this broad land, nor by any organization, than has been done by the Brotherhood of Locomotive Firemen for the good of humanity. We will add in our interest the railway organizations of the North and South, and you have no idea, and the great number of railway men have no idea, what power there is in the number of railway employes. When I say employes I mean every man who is on the pay-roll, from the president down to the man who occupies the humblest position. Railway men organized can send men to the Legislature, men to make laws by which they will work together; can send men to Congress, can send men to the United States Senate. The time has come, in my judgment, when we should do this. The time has come when we should exercise our power. The time has come when traditions, old and moldy traditions, should be forgotten, and because my father was a Democrat before me, I should not vote on that account the Democratic ticket. Nor because my father was a Republican should I continue a Republican during my life. We should support the issuances and the interests that are near and dear to us.

We made the charge of being selfish, but I believe the railroad men would be unjust to their employers to permit vicious legislation that would injure them, on which they were dependent, and I believe that the interests of the employer and employe are mutual, and we should work together.

Now, there are many things that might be mentioned here tonight, if the time would permit. The organization of which you are members occupies a position in the business world, as well as the labor world, of which you can well feel proud. Railroad officials, instead of antagonizing and finding fault with our organization today, send or write to the Grand Lodge office, asking us if we can not find men for them when they are in need of engine men. There is no feeling of discontentment nor dissatisfaction between the employer and employes of the organization in the United States, Canada or Mexico. There never was a warmer feeling nor kinder relations existing among the railroad officers and the members of our Brotherhood than there is at the present time, and I want to say to the gentlemen who probably will meet the officers for the first time, to figure for those whom you represent, that which you believe they are justly entitled to, let your demands be tempered with fairness, be wise and judicious in your dealings, don't be unfair, and I believe that if you present what you are seeking in a businesslike way to the officers of your company you will go back to your homes well pleased with your visit, and your men will appreciate your efforts, and probably they will reward you in their own way when you return to your homes again.

I hope that you may be successful and that you may secure all that you are seeking, and when you return to your homes again it will be with that same kind feeling existing between yourselves and the employers of the road on which you are at work, and that that kindly feeling may continue during your lifetime and mine. You are going to leave to those coming an organization which was not yours when you entered the railroad service. You will leave none of the services, the time and money you have spent in their behalf, but there is one thing that can be said for you—you have furnished for them an organization that has the respect and confidence of the employer, as well as labor organizations in this country and every country where labor is organized. I thank you.

Toastmaster Allen: I take great pleasure in introducing—I can't say brother, but we really ought to say brother, for wherever you see the Grand Master it seems as though you see Mr. Burdick; that is, on occasions of this kind. Mr. Burdick has always been with us, and he will sing you a song. He is a direct production of a railroad man. His father was a railroad man.

Mr. Charles Burdick sang "Illinois, Illinois."

Toastmaster Allen: No doubt all of you have been reading the articles in the papers in regard to the trouble they have been having in a certain insurance company, the Hyde and Alexander fight. They have been after one of our officers for the presidency of that organization, but we have been able to retain him—Bro. Carter, our Grand Secretary and Treasurer.

Grand Secretary and Treasurer W. S. Carter: Gentlemen and Brothers—When a man comes to a banquet that can't sing a song, can't tell a joke and can't make a speech, he is in a bad fix, and I am in that fix. The Grand Master asked me what I was going to say, and I told him I didn't know. When I get up I never know what I am going to say, and when I sit down I never know what I have said. So if I fail to say anything of interest you know the reason. I suppose, brothers, that it would be expected of me to say something concerning the Beneficiary Department. I can only say that it is to the credit of the Brotherhood of Locomotive Firemen that no fireman or engineer who was a member of this organization ever died and left his family in want. Every man who has died a member of our organization has perhaps carried with him to his grave the gladdening thought that his loved ones had been protected.

Your Grand Master recited to you the fact that nearly $9,000,000 have been paid by the Brotherhood of Locomotive Firemen to afflicted members and to widows and orphans of deceased members, and when you take into consideration that the larger portion of that nearly $9,000,000 has been paid within the last few years, it will be made positive to those who hear me say it that the Brotherhood of Locomotive Firemen has not only a mission to fulfill, but one it has fulfilled. There are many organizations that come before us from time to time, promising what they are going to do. I have heard it said that the Brotherhood of Locomotive Firemen had outlived its usefulness, or perhaps it was not "delivering the goods," as some have said. They all have made promises that if you would simply go with them, they would do better by you. The Brotherhood of Locomotive Firemen needs make no promises.

I got a few figures when I left the office this afternoon that I thought might be of interest to you. On the 18th day—I believe it was the 18th day—of February last, the total of the funds of the organization—that is, the cash on hand—for the first time exceeds the half million mark. Shortly after the beginning of the first quarter of the year the total funds aggregated $518,000. Towards the latter part of the quarter that decreased somewhat. I find on the close of business on May 31, 1905, that in our receiving fund —that is, the money that had not been appropriated—there was $11,000; in the beneficiary, $87,000; in our general fund, $112,000; in our donation fund, $697; in our protective fund, $256,000; in our petty expense fund in our office, $100—the aggregate being, at the close of business on the last day of May, $467,848.15. We can't make quite as good a showing as the Equitable, but for a labor organization it is a good showing. I believe that we can continue to increase our funds. I believe that we should provide a great fund for the protective department and for the beneficiary department. I am sorry to say that we have never provided for a rainy day in our beneficiary. We have lived, as they say, "from hand to mouth." I believe the time will come when the members of the organization will see the necessity of laying by a reserve fund for the beneficiary department. A young man secures employment as a locomotive fireman. He probably works 30 days for $50, without regard to hours or money. This man comes in over 30 years after the Brotherhood has begun to pave the way for him. In time he joins the organization, and later passes into another organization. Now, I believe that that young man, as he comes into our organization, secures his benefits, should leave us something to remember him by, and you know he could leave nothing as good as cash. I believe that if we had a surplus reserve fund created, so that when a man began to hesitate whether he should keep up or not, he would remember that there was a reserve fund there to protect him in his old days.

I believe there are several ways of making reserve funds. It may be done in the manner of a certain organization in the State of Illinois, which is not connected whatever with a labor organization. It is said that as soon as a man spits a little blood, he joins an insurance company, later dies of consumption. To protect the company from such cases, this company provides that if he dies within a certain number of months he only gets a certain proportion. Now, if a man joins the Fraternal Reserve of Illinois, he takes out a $2,000 policy, and if he dies within a short period of time the company only pays $1,000, and the balance goes into the reserve fund.

Toastmaster Allen: I take great pleasure in introducing to you, brothers, the Hon. Judge Irwin.

Hon. W. T. Irwin: Mr. Toastmaster, Grand Master and Members of the Brotherhood—It is a great pleasure for me to be with you this evening. In fact, when I was requested to come to Galesburg at this time I did not know at that time what I was coming for, nor who I was going to meet. I met the Grand Master, and he issued a peremptory order, which he had assumed authority to give at the time, that I should be with him at this time on this trip to Galesburg. I complied with the order, and on my arrival at Galesburg, instead of meeting a few of the members—I expected to meet a few of the employes of the C., B. & Q. Railroad—it immediately flashed over my mind that I was meeting the entire C., B. & Q. Railroad. Considering the entertainment that has been dealt out to me since my arrival in Galesburg, it is almost impossible for me to get that idea out of my head. It has been a great pleasure, gentlemen, to meet you. I don't know when I have been brought in contact with a lot of men apparently about the same age, all from the same walk in life, and think that those men are all human, all from one line of employment, one particular walk in life, as from one particular railroad in the little town of Galesburg. It seems almost incredible. Scarcely any one of you have gone beyond the meridian of life. Yet you have all reached that point in life where you are filling from day to day the most responsible positions that are held by any one, you might say, in any other walk or avenue of life that could have been chosen. It is this responsibility that makes railroad men the shrewd business men that they are. The men at this table tonight in ten, twenty or thirty years will undoubtedly be superintendents, vice-presidents and presidents of the C., B. & Q. Railroad. If not this, on some other railroad. The very men that are occupying those positions here today were occupying the positions that you held ten, fifteen or twenty years ago. And while these particular men have not invested their money in building and developing this property, they have added that which is more important to the success of their property, and that is the good, honest, energetic services in building up and taking care of the business of the company. I don't care how good a president you have got on the C., B. & Q. Railroad, I care not how good your vice-president, how good your managers are, if it were not for the men who handle the engines, the men who pull the trains, the business of the C., B. & Q. Railroad could not be a success, and it would not be a success if it were not for you. You are just as important in the positions where you are as though you were sitting in the president's chair, instead of shoveling the coal in the engine or working the throttle of the engine, as to transact the business of that company. That, gentlemen, it seems to me, is a lesson as to what you have to prepare yourself for. Build up the part you are taking now, build up and promote this great property. Now, apply that principle with the Brotherhood, and the Brotherhood with the officials of the company. How good are the officials of the company, in all honesty to themselves, in all fairness to their property, if they do not intend to be fair with the men on whom they are dependent for the success of the property they are managing? A railroad president does not sit in the president's chair simply because he can sit there and be arbitrary. He doesn't sit there just because his name is so and so, or because he has certain relations; but he sits there because he is able to make results; because he is able to protect the property; because he is able to make returns and get the business, and transact the business required to be transacted to make the property a success. And without your help, without your co-operation, that can not be done.

It has not been my privilege to shovel coal into an engine, or handle the throttle of an engine to such an extent as to entitle me to come under the pale, or within the lines which are drawn to entitle me to membership in your organization; but I would be proud to say that if such condition existed, nothing would give me more pleasure, if it met the approval of the members, to count me one of you. I have been somewhat familiar with the business part of your organization for the past ten years, the offices having been in close proximity to my office, and, having been brought in almost daily contact with the Grand Officers and those who transact your business from day to day, I want to congratulate you on having the finest business organization of any fraternal association in this country. I want to congratulate you on the conservative, careful methods employed some time ago in the handling of your business affairs. The fact is, gentlemen, that that is one of the greatest secrets of your success, because with the large membership, with the large accounting system necessary to look after that membership, if you didn't have almost a thorough system, if you didn't have behind you that honest integrity, it would be impossible for you to make the showing read by your Grand Secretary and produce the figures read by your Grand Master here this evening. I doubt if there is another organization of like character in the world that can show as straight figures, show as good business ability, as careful, conservative management as the organization of the Brotherhood of Locomotive Firemen. To my own knowledge, you have a Board of Trustees that investigate all the accounts and every item of expense that may come in, and about once a year, in order that there may be no mistake, you employ a thoroughly expert accountant to go over these accounts and check them over, and so far as I know and believe, and I am well informed, there has never yet been charged a misapplication of one cent belonging to the Brotherhood of Locomotive Firemen—a record, gentlemen, that I don't believe exists in any other brotherhood organization in the world; a condition that gives you confidence in the organization of which you are a part and of which you are a member; a condition that is bound to command the respect and confidence of the entire business world. I don't care where the Brotherhood of Locomotive Firemen goes—North, South, East or West—you can go to any financial institution that you might desire to go to, and you will find that the Brotherhood of Locomotive Firemen shall have all the credit that they may desire at any time and under any circumstances. Why? Simply on account of the conservative, honest business management of its Grand Officers. It can't, that reputation can't remain in one city; it can't remain in one State, nor does it remain in the United States; but wherever the Brotherhood of Locomotive Firemen is known, that reputation goes with it. Another thing: There is not a business concern in the Central West, and I don't believe in the entire country, that does the amount of business, that does business with as many people, as the Brotherhood of Locomotive Firemen do, that handle the amount of money they do, that distributes the amount of money that they do, but what has ten times the litigation, ten times the expense brought about by litigation, that the Brotherhod of Locomotive Firemen has. . . . .

I want to congratulate you gentlemen, in conclusion, that you have, in my judgment, a corps of Grand Officers of which any organization could be proud, and should be proud. I don't believe there is a gentleman before me that handles the shovel or handles the throttle on the engine that puts in more hours of hard labor, that works more conscientiously, or that gets better results in the line than the Grand Officers in charge of your affairs and of the Grand Lodge. Carter is nearly dead. Hannahan is always tired. And every clerk about your offices looks hungry. Now, I wouldn't advise you, gentlemen, to raise these salaries to $100,000, as the officers of the Equitable draw, and of many other companies. I wouldn't advise you to make Carter's salary $75,000, but I do say that you get the best services for the least money of any business organization in this country, or of any other insurance company of this country, and you ought to appreciate it. I thank you all.

Toastmaster Allen: A brother is with us tonight who some day you might have to see in order to get your claim paid—Dr. Watts, our Grand Medical Examiner.

Grand Medical Examiner W. D. Watts: I heard something about music when I started over here, and I laid out a couple of songs and came away and forgot them. And you will have to excuse me for not singing. I will try and sing to you some other time. If you will permit me to digress a little, I will make a few remarks.

Thirteen has in some cases been a lucky number to me. A gentleman with whom I was talking this evening, a brother, and I were talking about old members, said: "You are gray-headed, and I beat you another year." The 13th day of August, 1882, I was made a member of A. G. Porter Lodge 141, and I have been a member of the Brotherhood ever since. I have been asked at different times why it was that through all these years, not being in the employ of a railway company, I retained my membership in the Brotherhood of Locomotive Firemen, and I have answered them all this way: "Because it is a brotherhood." And I meant the word "brotherhood" in its largest and best sense. There is no other organization to which I belong where I feel that I have a brother in every member of the organization, and that my brothers are only limited by the members of the organization. There never has been a time in all these years when I did not feel I had a brother wherever I had a Brotherhood man.

When I joined the Brotherhood I joined it without knowing anything about what it was—practically nothing. The Brotherhood at that time had very little to do and very little to say. A fireman was the engineer's dog. You did what he told you to do, or he would turn you in, and if he turned you in your chances for promotion were just about as good as a pig's for wearing a standup collar. But I very soon found out that there was something else besides fun in the Brotherhood, and I found it out in this way, if you will excuse me for a little personal talk: I was in the city of Belleville, O., and was taken very sick—taken off my engine to the boarding house—and for four months was at death's door, given up by my physician, and that time was most of it a blank to me; but I found out that I was waited upon, taken care of, and my bills were guaranteed by my brothers, men with whom I had just become associated in that lodge. When I got well enough to be moved to my home in Michigan I went there, and was around there all summer, getting a little bit stronger, but very slowly. I found that the Brotherhood men had something to do besides going to lodge and having a good time, and I have never felt since that time that I was ever without friends, no matter where I was, so long as I was a member of the Brotherhood, and that is the reason why I am still a Brotherhood man, though not in engine service. You have practically men from all walks of life. Many I know are in the different lines of business. When I looked out upon the convention at Chattanooga it was a revelation to me. There were men as brainy as any men from any organization or political party. This same thing occurred and came to my mind at the Buffalo Convention, and I have not seen the time that I was not proud to be classed with the Brotherhood of Locomotive Firemen.

There was a question that was brought up in one of the talks of the speakers who preceded me in regard to insurance. There are many fraternal organizations doing insurance business. Your life as an organization is chiefly concerned in a protective department. But I think I am safe in saying that if your insurance department became quartered up and your death claims began to pile up, you would very quickly realize that you had an insurance department that was of vital importance to you, and very few of the Brotherhood men realize how many roses you are scattering upon the pathway of life, instead of waiting, as some organizations do, to pile them on his grave, and these all make men like the Brotherhood. They all make the members stay in the Brotherhood.

There are passed through my hands on an average of about 75 beneficiary applications a day, not many days 125 and very few days less than 50. Just figure it up for yourself. If I would approve one bad risk each day for six days in the week, how long would your Brotherhood insurance department hold together? The risks, I maintain, depend chiefly on the Medical Examiner, and if you have a Medical Examiner that will approve and recommend risks that never ought to be assumed by any insurance organization, there is something wrong. I am glad to say that we have in our Brotherhood very few that can be criticised. But, as Bro. Carter has said, that when a man is carrying $1,500 insurance at the age of 39 years or 40, he goes to an examiner and he is examined for an increase in his policy for $3,000, and within three months from the time his application was made out and sent in, as a straight claim application, the very same doctor recommends him as a totally disabled applicant for insurance, it generally looks as though there was something mouldy about it, and it becomes a matter of serious thought as to whether those men are honest, and I assure you that whenever I discover anything like that, the man is going to be asked some very pointed questions, because when a man's application is approved for a policy of a certain amount and the same physician within a few weeks or months approves his total disability claim on the claim of consumption, Bright's disease, an enlarged spleen, or any other disease of long standing, there is something wrong; but it has been done several times, I am sorry to say. We don't intend that that sort of thing shall occur if we can help it, but you can see the necessity of having your men carefully looked into.

I want to congratulate the members of your lodge in the support of your Local Medical Examiner, and I want to advise you from the standpoint of the Grand Medical Examiner, that when you get a man who is honest and just, and isn't afraid that he will lose his private practice because he is honest enough to state his convictions, you can not get a better man. Now, I am not talking for Dr. Evans.

I wish to thank you, the members of your lodge and all who have been interested in this magnificent entertainment tonight. It has been a pleasure to me, and I am sure has been appreciated by every member of the Grand Lodge here, and the friends of the Brotherhood. If any of you gentlemen come to Peoria, you will be welcome at the Grand Lodge offices. I thank you.

TOASTMASTER ALLEN: We take great pleasure in introducing as our last speaker the man that needs no introduction, as he makes you introduce yourselves to him and he follows you from one ill to the other, and there we are culled down pretty close. Dr. Evans.

DR. D. J. EVANS: Mr. Toastmaster, Gentlemen—About a week ago or a little longer some of your members asked me to be present this evening at your banquet, and incidentally stated that I would be asked for a few remarks. The first part of this I was very glad to accept—always glad to accept the banquet—but the last part was a bad mistake. However, I have made a few notes, if you will spare me a few minutes. Gentlemen, you represent in this lodge a class of men physically able, almost to a man, to pass a medical examination in the regular army. Your very occupation demands that you have nearly perfect constitutions. Having perfect health and a good constitution when you enter upon your duties as firemen, it is a duty you owe the railroad company, your family and yourself that you preserve these requisites. Physiology states that a man after 40, or possibly 45 years of age, is physically on the decline; that is, the breaking down is in excess of the repairs, and it is to the interest of yourself and those dependent upon you that you prevent this early breakdown, for I will admit that a man's reasoning powers and judgment are at the best between the ages of 40 and 60 years of age.

The labors of the locomotive firemen are very hard, to say the least. The railroad officials are fully aware of this, and before entering upon your duties you are called upon to pass both a physical and mental examination, and in order to pass this last requirement you must have brains, lots of them, and of the best quality. Just a word in regard to 477. This lodge is just entering upon its second year under the most favorable of circumstances. I have been exceedingly fortunate in having made most of the examinations, and I wish to state, and I think Dr. Watts, your Grand Medical Examiner, will uphold me, that beneficiary certificates were never issued to a better class of firemen than those of 477. There may be a few that were just as good, but none better. Gentlemen, I thank you.

TOASTMASTER ALLEN: Mr. Burdick has consented to sing us another song.

Mr. Burdick then sang, and responded to an encore, with all joining in the chorus, the song entitled, "The Battle Hymn of the Republic."

TOASTMASTER ALLEN: I wish to give a little toast to our wives:

Another year has sped away,
And yet, thank God, we are not clay.
No churchyard ghouls purloin our bones,
No sculptor cut our names on stones.
Our wives, perhaps against their will,
Instead of widows, wives are still.
And may the Lord for many a year,
Ne'er let them shed a widow's tear.

MEMBER.

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Reply to a Knotty Problem.

The brother from Lodge 212 states that "A" commenced firing in March, 1900, "B" commenced firing in December, 1900.

"A" is, therefore, older as a fireman than "B" by nine months.

Now, the rule as given by the brother of Lodge 212 states that when business falls off they will be placed on runs their age entitles them to—record in latter case being considered.

The men that made the rule should understand what they intended to convey in the use of the term, "their record in latter case being considered." If they meant by the term "record" that age in service as an engineer would be added to the age he already had as a fireman, and by combining that age he would be allowed to take any place that such age gave him, it would be very plausible. "B" can not claim any age over "A" in any position where seniority as a fireman governs. If you divide the age then as a fireman, "A" has one year and nine months more service or seniority rights than "B."

A rule in effect here reads: "Seniority in service as an engineer or a fireman shall govern. We add both ages together, but in no case do we allow a man to be displaced that is unfitted for promotion, and who is holding any switch engine job of running. We also force them to take switch engines at any point we can find one for them to handle, regardless of their age in either service. Jobs of running switch engines are not sought by many of our firemen." S. P. MEMBER.

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Joint Protective Board, Pennsylvania Lines West of Pittsburg.

The Joint Protective Board of the Pennsylvania Lines west of Pittsburg convened in its thirteenth annual session at the Seventh Avenue Hotel, Pittsburg, Pa., May 22, 23 and 24, 1905. A full representation was present from all lodges on the system, there being twenty-two subordinate lodges. The board being without a chairman, Bro. John Martin was elected. The business of the past year was then very carefully reviewed, and quite an interest was manifested. The financial standing of the board is good, all assessments being paid with one exception. A report was read from each lodge in regard to the grievances presented and granted during the year. These reports showed the zeal which is characteristic of true Brotherhood men, and the manner in which they were presented and requested, and the patience and persistence of the members in their efforts all manifest what the Order is attaining and has in the past attained both for employer and employe alike.

Many requests, it is true, were not granted, and, of course, these were deemed necessary to the comfort of the firemen, but we thoroughly appreciate what concessions we have received and hope for more in the future. The spirit in which the local boards was received by their respective officials was noted and greatly commented upon. Truly an era of "good feeling" must exist when employer and employe meet to discuss in such good will matters pertaining to their mutual interest and welfare.

The conditions existing on some divisions are not yet up to that standard which our organization aims to establish, but we must be patient and hold out earnestly to the end for such as will benefit all parties concerned. A very interesting account was given by the delegates of the conditions existing on their respective divisions. By this many profitable comparisons were made by the assembled delegates, which is sure to result in general good to the firemen of our system.

The Vandalia System, being desirous of organizing a Joint Protective Board, was extended an invitation to send a delegate to meet with us. To this they responded, and sent a very able representative in the person of Bro. Black, who was given a hearty welcome and aided in every way possible to organize a Joint Protective Board. In the haste that attended the closing of the session, Bro. Black was not given an opportunity to thank the brothers for their assistance, and by his request I will say that he feels very grateful to each member of the board, and requests that, should they become in need of anything in his power to grant, they have but to command him.

A letter of congratulations and best wishes was received from Bro. Harry Straley, who was at one time an earnest member of the board, but who is at present engaged in stock farming. A set of resolutions was adopted and a copy sent to Bro. Straley, and also a copy spread upon the minutes of the board.

An Adjusting Committee was appointed, consisting of three members—Bros. Dow, of Lodge 9; Hamilton, of Lodge 466, and Brooks, of Lodge 582—the purpose of this committee being to adjust grievances before being presented to the higher officials. Next came the election of officers, and it occasioned much regret to the assembled brothers when Bro. Martin refused to allow the use of his name for the office of Chairman, and Bro. Alexander his for that of Secretary and Treasurer. Truly, we could not have better material in these important offices, but the time had come when we should respect their wishes to be relieved from the responsible duties which in the past they had performed so faithfully. As a result of the election of officers, Bros. Clarence Stewart, of Lodge 541, was chosen Chairman; F. M. Dye, of Lodge 445, Secretary and Treasurer; P. H. Doty, of Lodge 141, Vice-Chairman; Bros. Rush, of Lodge 555; R. J. Hamilton, of Lodge 466, and Murray, of Lodge 564, Trustees.

After the closing of the session the members had their photographs taken. All departed to their respective homes feeling that it had been "good to be there," and hoping to meet again next year. R. J. Hamilton.

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A Voice From Oregon.

Railroad men, more especially firemen, are considered by some to be mere tools, and of no more importance than to shovel coal, heave blocks and take desperate chances of getting badly hurt or killed.

Often we hear the remark made, when speaking of some recent railroad accident, that "it was fortunate no one of note was injured—only a fireman was killed." Doubtless such people do not stop to consider that a locomotive fireman is really a human being, that he is working for the support of himself and probably that of an aged father and mother, wife or children, and that he is living in hopes that some day his efforts will place him in a position where his work will be lighter and his income better.

Some people look at a fireman, after he has had a hard night's run and is blackened by coal dust to such an extent that it is almost impossible to distinguish his original color, and make some slighting remark as to his appearance, but fail to give him any credit for the hard work he has performed in his efforts to keep the pointer to its place, so as to enable the engineer to land her in on time. The firemen of today are physically perfect and of good mental ability, required to be so by the management, and plainly shown by the rigid examination through which an applicant must pass before he can be given employment.

Again, when some people speak of a fireman they do not stop to entertain the thought that the man who is on the right side was once a fireman, and that master mechanics and superintendents of motive power, etc., have risen from the left side of the cab. Take the engineer. the least of the three positions mentioned, and think of the numerous duties and the amount of knowledge he must possess—a thorough understanding of the great machine in his charge, a clear conception of train orders and standard rules, good, sound judgment and plenty of good common sense. People who know nothing of the duties of enginemen no doubt think that all there is to be done in railroad service is to sit up and let her go—any one could do it if they only had the chance.

For the benefit of any nonrailroaders who may chance to read this I'll say, I've put in five and a half years at all kinds of runs and running switch engines, and during that time I made railroading, with its many appliances, a careful study and now I'm just finding out that I haven't learned the alphabet of railroading, and I can find a good many more who are in the same condition as myself. F. L. B.

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From the Cradle to the Grave.

Bro. E. McLaughlin, for many years an engineer on the East Division of the Missouri Pacific Railroad, and a faithful and worthy member of our Brotherhood, has composed a song entitled "From the Cradle to the Grave." The words have been set to music, and the song is very impressive and tuneful. Bro. McLaughlin is a man of high standing, excellent habits and unquestioned integrity. He is ever ready to help his fellowman with a kind word and a cheerful smile and, as can be inferred from his song, always endeavors to look on the bright side of life.

The words of the song are as follows:

"From the cradle to the grave, our life is but a span,
When sorrow comes, let it depart, forget it if you can;
While roaming thro' this world, you'll meet many a frown,
But always keep your spirits up, ne'er let them be cast down,
And should fate e'er cause you grief or pain e'er fill your heart,
Try with a will to banish them, you'll find they'll soon depart;

What little time we live, all trouble try
to save,
And let your life be one bright dream,
from the cradle to the grave."

"From the cradle to the grave you'll meet
with many a woe,
But don't be sad while life is yours,
wherever you may go;
When sorrow comes to you, and trials
chill your heart,
Look always to a brighter day, bid all of
them depart,
For our life is but a dream that will
soon pass away;
To some their life is always night, to others
always day;
So always cheerful be, with joy your
pathway pave,
You'll then be happy all your life, from
the cradle to the grave."

Chorus—
"From the cradle to the grave, our life
is but a span,
When sorrow comes let it depart, forget
it if you can,
What little time we live all troubles try
to save,
And let your life be one bright dream
from the cradle to the grave."

MEMBER.

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Memorial Day Exercises of Federated Railway Brotherhoods.

On Sunday, June 18, 1905, the tenth annual Memorial Day of the Federated Railway Brotherhoods was observed by the members of the Brotherhood of Railway Trainmen, Order of Railway Conductors, Order of Railway Telegraphers, Brotherhood of Locomotive Firemen, Brotherhood of Locomotive Engineers and the International Brotherhood of Electrical Workers of Mauch Chunk and Tamaqua, Pa. Although the weather was very warm the boys turned out in great numbers to do honor to the memory of their deceased brothers. The members of the various organizations took a special train on the Jersey Central for Tamaqua at 7.45 a. m. The band of Mauch Chunk accompanied them. Upon the arrival of the train at Tamaqua the six organizations, accompanied by the Tamaqua and Mauch Chunk bands, marched to the Odd Fellows' Cemetery, where a fine program was carried out. Rev. A. F. Taylor offered a short prayer, after which the Reformed Church choir rendered a fine anthem. Rev. J. J. Fisher then delivered a short address, which was followed by another selection from the Reformed Church choir. The brothers decorated the graves of the deceased members of their lodge with flowers, while the bands rendered several sacred selections.

At Mauch Chunk the members of the six organizations met at the Opera House at 1.30 o'clock and moved down Broadway to the various cemeteries in East Mauch Chunk. The order of the procession was as follows: City police, chairmen of the six organizations, colors and bearers, Tamaqua Band, Brotherhood of Railway Trainmen, Order of Railway Telegraphers, International Brotherhood of Electrical Workers, Mauch Chunk Band, Order of Railway Conductors, Brotherhood of Locomotive Firemen, Brotherhood of Locomotive Engineers, and last carriages containing guests and disabled members. They marched to Evergreen Cemetery, where appropriate exercises were held. Rev. Jonathan Duncan, pastor of the Grace M. E. Church, gave the invocation. The M. E. Church choir gave a selection, and Rev. J. E. Freeman, pastor of the First Reformed Church, followed with a short address. The bands rendered fine selections, while the members of the various organizations strewed flowers over the graves of the deceased brothers.

A line was then formed and the various Brotherhoods marched to St. Joseph's German Catholic Cemetery where a short prayer was offered by Rev. Wm. Heinan, rector of St. Joseph's German Catholic Church, and the graves were decorated.

The march was then continued to the Immaculate Conception Cemetery, where the program was opened by a prayer by Rev. Thos. J. Larkin, rector of the Immaculate Conception Church. The choir of that church rendered a fine selection and the graves were decorated as usual.

A line was then formed and the march continued to the Mauch Chunk Cemetery, the program being opened by a prayer from Rev. J. G. Boughter, pastor of Ebenezer United Evangelical Church. The male chorus of that church rendered two fine selections. The Mauch Chunk band rendered a selection while the graves were being strewn with flowers.

In the evening exercises were held in the Opera House and were largely attended. The program opened at 7:30 with an address of welcome by Mr. Luther LaBarre, of East Mauch Chunk. In his talk he congratulated the many members and their wives and lady friends upon the large attendance on this occasion. A prayer was offered by Rev. D. T. Weidner, curate of St. Mark's Church, after which the Cambria male choir rendered a selection entitled "Rest, Spirit, Rest." The opening address was delivered by Hon. E. M. Mulhearn. He said he believed in trade unionism and urged the brothers to be just in all their transactions.

Mr. W. G. Besler, Vice President and General Manager of the Jersey Central Railroad, who was invited to attend but found it impossible to do so, sent a very manly communication which was read by Mr. Zerbey. He said in part that the management of his company believed in friendship and co-operation and wished to encourage harmony with the members of the union and its officials.

Bro. L. J. McNulty, President of the International Brotherhood of Electrical Workers, was the next speaker. He asked for the co-operation of the people in the work of his organization.

The next speaker was Hon. L. H. Barber, who gave a short but interesting address.

Bro. Matthew Smith then gave a few statistics of the organization.

Third Grand Chief Engineer, Bro. D. L. Everett, of Cleveland, Ohio, next gave a little talk.

Bro. C. A. Wilson, First Vice Grand Master of the Brotherhood of Locomotive Firemen, was the last speaker. He said that he appreciated the interest which the ladies took in the exercises of the day and spoke of the faces which he had seen on this occasion last year and which were among the departed this year. He spoke of Bro. J. N. Weiler who occupied a chair on the stage last year, but has since left a vacant chair among the committee.

At the conclusion of his talk the Cambria male choir, of Lansford, rendered six fine selections for which they received due applause.

HENRY L. BEST.

* * *

How I Became a Subscriber.

Through the kindness and progress of the engineers and firemen of the N. P. Terminal I have been able to send in many new subscriptions, and as the question has been put to me very often, "Why do you take such an interest in the Firemen's Magazine?" I would like to be able to tell. My answer is: "Although a perfect stranger when I first wrote its Editor, my correspondence was given such courteous treatment that every letter I received from the Magazine, no matter how much I tried to do for that publication, always seemed to put me further in its debt." I therefore made up my mind that I would try and do what I could to assist in the good work of the great Brotherhood of Locomotive Firemen, because it reminds me of the "great brotherhood of mankind," a thought which thrills my soul with a deep consciousness of the fact that there is a substantial reality and a cheering and uplifting influence for the struggling and toiling element of humanity.

I can never think of the Brotherhood without thinking of the great "Grand Master of Mankind," and what he is to many a poor, ambitious fireman who toils all day and all night long on the deck of his swaying, panting engine, endeavoring to feed the great, insatiable monster. I can tell you from experience that the power generated by the man behind the scoop nowadays is something vast and awful in comparison to that of the locomotives I used to feed and keep scampering through the summer shower or winter snowstorm, through the fog or bright, clear day, or pitch dark night. When I think of those bygone days I often instinctively ask myself the question, "Where would I have been today without the cheering words coming from a sober, Christian man sitting on the righthand seat box, grasping the throttle tight with a steady and sober hand, as he kept his strong, keen eye peering through the darkness to see that everything was all right ahead?" I imagine I can still hear him say, "I think we will make the time up all right," and then she would greet us with the pop, which in a hard fight is so pleasing to a fireman's ears, and which encouraged me to renewed efforts. How I would at intervals enjoy my seat box under such conditions for a few minutes, looking all around and above at God's beautiful universe!

In conclusion would say that as I think of our Editor I often conclude that there is no one who needs encouragement and prayers more than he, for look at the many thousands he tries so hard to please. The boys of the N. P. Terminal Company send their best wishes to him.

S. S. TEASE.

In the Field

First Vice Grand Master.

January first found me at Altoona, Pa., working and meeting with Lodge 287. Here we had one of the best meetings that I have attended in some time. Among those who are looking out for the best interests of this lodge may be mentioned Bros. F. A. Davis, A. M. Barley, G. C. Keirn, H. B. Saylor and C. R. Walker.

The following named brothers, who represented the Joint Protective Board on the Pennsylvania Lines east of Pittsburg, were in attendance at this meeting and were loud in their praise of the members of 287: W. H. Potter, 235; F. M. Estep, 498; A. Bartlett, 3; A. I. Kaufmann, 381; W. W. Foreman, 347; D. M. Gibson, 310; G. T. Riley, 338; J. W. Gladden, 7; T. I. Leidy, 498; W. A. Forrester, H. O. Wagner, C. G. Rabuck, 287; W. T. Sweeney, 333; H. A. Barnett, 490; T. E. Tilson, 287.

The following members of Ladies Lodge 91 presented Lodge 287 with a handsome silk banner, which was accepted for the lodge by Bro. F. A. Davis in a very neat and appropriate speech: Mrs. S. F. Keith, Mrs. C. B. Gearhart, Mrs. J. R. Crinnel, Mrs. G. C. Kiern, Mrs. T. E. Tilson, Mrs. C. H. Ross, Mrs. C. Crimnel, Mrs. E. Hoover, Mrs. W. A. Lynch, Mrs. F. O. Rishe, Mrs. P. H. Leonard, Mrs. H. J. Walker, Mrs. J. A. Lucas, Mrs. G. D. Fleming, members of L. S. 91.

I was pleased to meet the following brothers of 287, all of whom take an active part in the affairs of their lodge: D. M. Barkley, C. F. Dinley, W. M. Smith, R. H. Goodhart, S. I. Brandt, G. I. Dutrow, E. G. Harpster, W. A. Barker, E. H. Diehl, C. E. Dickson, M. J. Carless, I. G. Bookhamer, C. M. Fry, L. G. Smith, F. J. DeHaven, R. H. Sanders, T. D. Crawford, R. S. Guyton, D. Kennedy, C. H. Ross, I. G. Frazer, T. G. Burbank.

The members of the Pennsylvania Railroad Joint Protective Board join me in extending sincere thanks to Sister and Brother F. A. Davis and family for courtesies extended while in Altoona.

While working with the Western Maryland Joint Protective Board, I availed myself of the opportunity to visit Lodges 72, 75, 333, 214, 432 and 253. I am pleased to say that I found these lodges in fair condition. Among the members of 72 I met Bros. G. T. Groff, John Colton, F. A. Potts and W. S. Layton; of 75 Bros. P. A. Lynch, George O. Malley, J. J. Carr, B. J. Flanigan, F. L. Rhodes and W. S. Robinson; of 333 Bros. Henry Lawrence, T. W. Maxwell, S. L. West, Howard Beans and W. F. Swem; of 253 Bros. Robert Stackhouse, W. V. VanNoy, R. B. Pidcock and J. M. Mullen; of 214 Bros. H. S. Shaeffer, W. D. Feldmyer, P. W. Edwards, J. C. Yeager; of 432 Bros. I. I. Myers, N. O. Robinson and H. H. Connor. Bro. A. B. Miller of 448 was present and gave the members of 432 a history of the work done by the B. O. R. Joint Board. Bros. C. H. Pennell and H. C. Comper are enthusiastic members of 432. Bros. J. F. Murphy, S. M. Gould, A. Bartlett and F. Dunnery, of Lodge 3, together with B. J. Flanigan of 75 and E. H. Lower of 392 are forming a trust to control the Japanese water bird. We wish them success.

While visiting Lodge 319 I had the pleasure of meeting Bros. R. H. Lippman, Alex McGirr, W. F. Eberwein and J. H. Snyder. These brothers are the busy bees of 319.

While at Altoona I met the following members of Lodge 174 who are recognized as expert operators behind well-filled festive boards: O. W. Miller, J. H. Kauffman, C. L. Clickner (O. R. C.), J. C. Asper, J. Bishop (B. R. T.), R. H. Lynn.

I am sorry that my time was so limited while working with the Lake Shore Joint Board that I could not arrange to visit the lodges represented by this Board. After a consultaion with the officials, consisting of Mr. H. Storrs, superintendent, and Mr. H. F. Ball, superintendent motive power, the committee effected a satisfactory adjustment of their affairs. Much credit is due Messrs. Storrs and Ball for their broad views on matters pertaining to the welfare of employes. The membership represented by this Board is to be complimented upon having one of the best joint boards in the organization.

While in Cleveland, O., I had the pleasure of meeting and having a chat with Bros. A. H. Buse and F. N. Gear, the popular Master and Secretary respectively of Lodge 10.

Sisters Mary Towsley and Mary Negus, and Brothers F. N. Gear and J. L. Luce report L. S. 15 in a flourishing condition, and that L. S. 70 will not be the largest Society by the time of the next convention. Keep your eye on L. S. 15, Sister Sheay.

During the month of March Lodge 673 was organized with 204 charter members. After the lodge was organized we adjourned to the adjoining hall where the ladies representing L. S. 60 had prepared a banquet. The hall was beautifully decorated with flags and bunting and the tables with palms and roses, all of which lent an additional charm to the sumptuous repast that was enjoyed by all present. The members of 673 and the sisters of L. S. 60 presented the writer with a beautiful silver-handled umbrella. The presentation speech was made by Bro. F. A. Davis of Lodge 287.

While at Columbus, O., I had the pleasure of the company of Bros. Geo. W. Poor and W. H. Nason, the popular Master and Secretary respectively of Lodge 9. I am greatly indebted to these brothers for their kindness to me, and if either or both ever come east, I will be pleased to reciprocate their kindness by showing them the beauties and special attractive features of Coney Island.

While working with the Michigan Central Joint Board, in company with the General Chairman, D. C. Laughlin, and Secretary-Treasurer William McBlain, I visited Lodges 240, 5, 152, 300, and am pleased to say that I found them in good condition, and the members taking an active interest.

While at West Bay City, Mich., in company with D. C. Laughlin and other members of the Board, we were tendered the comforts of Bro. and Mrs. J. G. Goodwin's home, and we take this opportunity to express our thanks to them for the courtesies extended.

The members of the lodges representing the Michigan Central made no mistake when they elected Bro. D. C. Laughlin of 240, Wm. McBlain of 508, J. G. Goodman of 152, A. W. Ingram of 5 and R. B. Cole of 300 to represent them on the Joint Board. These brothers worked hard and faithfully in making their agreement with the company. I consider it one of the best in the country. While at Bay City, Ind., I enjoyed the comforts of Bro. and Sister Cole's beautiful home. Here I met Bros. W. H. Cudney, W. H. Martz, D. E. Curtis, officers of Lodge 300. It is no wonder that Bro. Cole, the Master of the lodge, boasts of having the banner lodge of the Brotherhood.

While at Peoria, Ill., I took a run over to Des Moines, Iowa, and attended the meeting of Lodge 102. We had a very interesting meeting. The members as well as the officers take an earnest interest in the work. I had the pleasure of meeting Bros. C. M. Krull, J. F. Bodenburger, J. Krisinger, J. J. Hogan, H. Newman and W. H. Brownson. With a corps of officers like these brothers, who discharge their duties honestly and faithfully, any lodge will certainly succeed in the work and enjoy prosperity.

In closing this letter, I desire to recall a portion of the contents of a letter received from an intimate friend and brother of Altoona. He says: "287 has many changes to record. About the 15th of March an engine blew up at Bolivar Station on the Pittsburg Division. The engineer was killed and the fireman, Bro. A. V. Colcord, died on the 20th from scalds and injuries received. On the 18th of March a passenger train on the Susquehanna Branch of the Cambria and Clearfield Division ran into an avalanche of snow. The engine was upset, killing Bro. E. K. Gerhard, the engineer, and crushing a foot 'necessitating amputation above the ankle' of the fireman, Bro. J. H. Miller. In the death of Bro. Gerhard 287 lost one of her oldest and truest members. He was initiated in January, 1887, and ever since has been a true and loyal member. He leaves a wife and two fine little girls, 11 and 13 years of age. Bro. Miller was to have been married in May, and his betrothed is here to cheer him in his affliction."

I will mention the lodges visited in my next letter. C. A. Wilson.

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Third Vice Grand Master.

On June 7, 1905, at 7:56 a. m., I left San Bernardino, Cal., for Los Angeles, arriving at the latter place about 10:00 a. m. The morning was most beautiful, the air was balmy, and as the train with lightning speed went from place to place and stopped for an instant only to take on and let off passengers, I thought of days that come and go in this glorious climate of California; orange groves on every side and without number, and as for flowers, well, it seemed that the whole earth was covered with them. The sight was simply grand. Certainly there must have been nothing left undone to make man's happiness complete in "this great and beautiful San Bernardino Valley.

On my arrival in Los Angeles I was met at the Naden Hotel by Bro. Donovan, of Lodge 97, a rising young capitalist of this city, who gave up the firing of an engine and engaged in the real estate business. Bro. Donovan is a hustler and bids fair to make his mark in this beautiful city. On the evening of June 7th, a good meeting was held under the auspices of Lodge 663, at which time a good attendance was present to hear "the good of the Order" discussed. Bro. B. J. McMillan, Master of Lodge 663; Bro. Thos. Negrich, of Lodge 672, and Bro. G. W. Woods, Master of Lodge 97, were at the meeting and took part in the evening's exercises.

Lodge 663 is a new lodge and is doing good work under the able and wise leadership of Bro. McMillan. The outlook for the new lodge in the way of increase in membership is flattering. This lodge represents the new road known as the "San Pedro, Salt Lake and Los Angeles," better known as "The Salt Lake Road." Trains are now running through from Los Angeles to Salt Lake, a distance of over seven hundred miles. This is the shortest route to Salt Lake and the road is destined to be one of the best in the western country. Bro. Negrich reports his lodge booming. Starting in with a membership of about twelve last February, he now advises me that they have a membership of about forty. There is no question but what Bro. Negrich is a hustler, and more to him than any one else is due the growth of Lodge 672.

As I write this letter there are ten thousand strangers in the city of Los Angeles from all parts of the United States, members of the Knights of Columbus, many of whom are members of the Brotherhood of Locomotive Firemen. The Grand Council of that organization is in session. The people of Southern California are certainly doing themselves proud in the way of entertainment. These people do not do things by halves. In the first place there is no need of cutting out any of the scenes. They have the climate, the mountains, the valleys, the ocean, the flowers, the historic places of interest and brave men and fair women. The old mission buildings are always places of attraction. Some of these buildings are now in ruins, while others are in a fair state of preservation. When we stop to reflect a moment we can readily see the sacrifices that were made by the early Christian people to help make California what that State is today.

Just contrast the difference in the way of traveling between now and "Grandfather's day." We now cross the plains in a few hours in palaces on wheels, with all the conveniences and comforts of life at our command, while years ago the forerunner of civilization came "overland" in an old, rickety wagon hauled by oxen, and blazed the way and laid the foundation for better conditions and better things for others.

On June 8, 1905, at 6:30 p. m., I arrived in San Diego, Cal., and after partaking of a good supper I held a very good meeting with Lodge 386. Bro. Dave Marrs was in attendance at this meeting and did his part to make it a success. Bro. A. V. Dodge was out of the city, and Bro. J. M. Dodge had a show on in his theater that night which kept him away. Bro. Kellogg was out on his run and it was impossible for him to be in on my recent visit. Lodge 386 is now mourning over the loss of their Master, Bro. M. A. Baird, who was killed by the overturning of his engine. Bro. Baird was held in high esteem by his associates in Brotherhood work. It is always a pleasure to meet with the members of Lodge 386, and I always try to do so every time I go to the Pacific Coast.

Friday evening, June 9th, was a glorious time for Lodge 97, of Los Angeles. While the meeting was in session the local lodge of the Brotherhood of Railroad Trainmen paid Lodge 97 a short visit. The B. of L. F. and the B. of R. T. of Los Angeles are on the very best of terms and get along well together. After the meeting was over sandwiches and coffee were passed around and the evening was spent pleasantly. Bro. G. H. Woods, Master of Lodge 97, is one of the most enthusiastic Brotherhood men I ever met, and the splendid condition of his lodge is due much to his hard work. Bro. Farron, the Secretary and Local Chairman, is also devoted to the work of the Order, and he is a valuable officer in his lodge. Lodge 97 is made up of good material, and if the lodge won't prosper with the hard work done by each and every member of this lodge, I would hardly know what to suggest to make the lodge good. The last meeting was the best I ever held with Lodge 97, and I appreciate it.

On June 10th I met with Lodge 139, Kern, Cal., and a good meeting did we have. It was well attended and interest was manifested by the brothers, notwithstanding the fact that the day was very hot. Lodge 139 continues to prosper all the time and has a good big membership now. On my first visit to this lodge, in 1895, I found them with five members, of which two were in the service of the S. P. R. R., and the other three were in search of employment, having lost out in the A. R. U. strike of 1894. Bros. Ward and Broysen, Master and Secretary, have done much towards making Lodge 139 a good one. They are assisted by a splendid lot of brothers who are always ready to give a helping hand.

On Sunday, June 11th, I held a good meeting with Lodge 566, Fresno, Cal. The day was an uncomfortably warm one, but we managed to have a good meeting. There is no question but what it can get awfully hot in summer, both in Kern and Fresno, and June is one of the warm summer months. This was my first meeting with Lodge 566 in a long time. The last time I was in Fresno illness prevented me from holding a meeting. Bro. Cramer, Master of Lodge 566, came in on his run and was present at the meeting. I was more than favorably impressed with the brothers that I met while in Fresno, and feel under lasting obligations to them for their kindness to me while with them.

On my arrival in San Francisco I found the weather cool and pleasant, a great improvement over Fresno and Kern. One can nearly always find good, cool weather in "Frisco" on any day in the year.

On June 13th in the evening I held a good meeting with Lodge 91 and the attendance at the meeting was large. Lodge 91 is one of our best Western lodges. At one time this lodge was on the verge of giving up its charter; that was just after the strike of 1894. Now that this lodge has again passed the danger line and is in good condition, it is an earnest wish that the members take good care that never again will such a mistake be made as was done in this late trouble of 1894. It took years to rebuild the lodge up again, and at one time it seemed as though it could never be done.

On June 14th I organized Lodge 678 at San Rafael, Cal., with 34 charter members. The lodge starts out in good shape, and from present indications they should have a large membership. Bros Frank G. Simpton was elected Master; Chas. Peck, Secretary and Treasurer; Ross Makin, Collector; M. M. Clarhy, Chairman of Local Board for California and Northwestern Railway; F. G. Simpton, Chairman Local Board, North Shore Railroad. San Rafael is about fifteen *miles north of* San Francisco and is a pretty place situated in the mountains. San Francisco business people live in San Rafael, as this place makes an ideal spot for a home. While in San Rafael I was entertained at the homes of Bros. Simpton and Gibson, which I appreciated very much.

On June 15th I held a good meeting with Lodge 143, Oakland, Cal., and had the pleasure of meeting many of the brothers of that lodge. This lodge is doing fine and has a membership of almost two hundred. I am sure that the members have been taking interest in their lodge, or this showing could not be made. When we think of the trying times of 1894 and that Lodge 143 quit doing business for awhile, and that she now is in such a splendid condition, we can not help but feel proud of the difference between now and then. Time makes many changes, and did so in this instance. It is an earnest hope that Lodge 143 will never go up against the real thing again. It is one thing to organize a good lodge and keep it ever afterwards in good shape and have it to do good work, and it is quite another thing to let some one run things into the ground. The sympathetic strike will put any lodge out of business, and all union men want to keep clear of entangling alliances that will surely get them into trouble sooner or later.

On June 16th at 1:30 a. m. I sailed on the steamer "Pomona" for Eureka and Arcate, Cal., via Pacific Ocean, there being no other quick way for me to go to these places without staging it over the mountains and making the trip by land much longer than by water. It was a most beautiful sight to see going through the Golden Gate. The sea was not rolling very heavy and we encountered no difficulty in crossing the bar. Once on the Pacific Ocean we sailed north until 5:00 p. m. I had been on deck enjoying the sights. At one time I counted fifteen vessels going to and from San Francisco. To see sailing vessels under full sail is a grand sight. At no time was the sea rough until about 5:00 o'clock, when the gong sounded for supper. I went and got a meal check, but that was all I was able to do. In a few moments we struck a heavy sea and I did not need a meal ticket or anything else. I made straight for my room and was not able to get out any more on the trip or eat anything at all. I had a genuine case of seasickness. I thought the end had come sure. The storm kept up and increased in violence until 11:45 p. m. I thought sure the boat would go down. The waves were something awful and I can not describe the terrible manner in which they lashed the "Pomona." It seemed that all the demons were turned loose. I managed to get up and take a look out on that awful night. The wind was blowing hard, the clouds had cleared away and the moon was shining clear and bright. Such a sight I never saw before and perhaps may never see again. With all this terrible and awful night the grandeur of the scene I am not able to write about it as I would like. I doubt that any one could do the scene justice with tongue or pen. It seemed to me that the water was coming from all points of the compass at one and the same time, and was making for the steamer in her battle with this terrible storm. One moment the ship was upon the crest of the waves, the next instant the water was sweeping over the decks of the ship. The sound of the mad sea waves was something beyond description and I was unable to sleep. Outside of the noise of the storm and the sound of working machinery everything was quiet. Nearly all the passengers like myself were sick. Occasionally an officer of the boat would pass by to see that everything was all right. The storm kept up all night and far into the day until we reached Humboldt Bay. It was then that I began to get a little better. At last we came alongside of the dock in Eureka, and I gladly went ashore and was met by Bro. C. W. Blakeley, who took good care of me while in Eureka. I want to say a good word for the steamship crew on the "Pomona." I never saw men who attended to business more strictly and saw to it that the passengers had the best of attention. This was all done without a particle of noise on their part. The Pacific Steamship Company can well feel proud of the captain and crew on this ship.

Once on land I began to get better, and after getting a good meal, cooked by the good mother of Bro. Blakeley, we set about arranging to organize the new lodge on Sunday, June 18th. We crossed the Bay and paid a visit to Master Mechanic C. J. Chapman, of the O. & E. R. R., who very kindly showed me around his place of business. Close by the roundhouse is a large lumber mill, and it is a sight to see the big logs of California redwood made into lumber. We took a trip up to Arcata, Cal., a distance of eight miles, and met many of the enginemen on the different lines running out of that place. I had the pleasure of meeting Bro. J. R. Wright in Arcata, who has taken a good deal of interest in Brotherhood matters in that part of the country.

On my return to Samoa I met Supt. Peed, of the O. & E. R. R., who invited me to spend some time in that part of the country seeing the sights. Mr. Peed extended courtesies to me, for which I am very thankful.

On Sunday, June 18th, I organized Lodge 239 with eighteen charter members. Bro. Fred Stonder, of Arcata, was elected Master; Bro. Blakeley, of Samoa, Secretary and Collector, and Bro. Liscom, of Koebel, Treasurer. This lodge is made up of members from several roads that run in and out of Eureka, Arcata and Samoa, Cal. There is no railroad communication with the outside world up there. The Santa Fe will soon extend its lines into Eureka and it will not be necessary to go to that place by water again. In and around Eureka is one of the greatest if not the greatest lumber regions in the world. California redwood lumber is the timber that predominates. The trees are mammoth in size. Eureka is a very nice place of perhaps ten thousand people, and from what I could see and learn is quite a business place. Arcata is a small but pretty place. The locomotives in that part of the country are not large. I feel certain that when the Santa Fe builds into Eureka and brings in some of its large power that it will set our brothers in that part of the country to thinking. Even though the engines are small which they are using, they are locomotives just the same. We should have a membership of fifty in Eureka before the next convention if the members of Lodge 239 will hustle a little bit, which I feel safe in predicting they will. I was treated nicely while in Eureka and am under many and lasting obligations shown me by Bro. Blakely while in that city.

I left Eureka on June 19th, arriving in San Francisco at 8:00 a. m. June 20th. There was nothing in the down trip of unusual occurrence and I came through without any trouble. The ocean was calm and everything went along all right, for which I was very thankful.

On June 21st I visited Lodge 260, Sacramento. Owing to only a few members being in the city, we were unable to hold a regular meeting. I had the pleasure of meeting Bro. J. Q. Iwing, General Chairman of the S. P. R. R. while in Sacramento, and feel grateful to him for kindnesses shown me while in that city.

Bro. Iwing has recently succeeded Bro. Albert Phillips as General Chairman of the Pacific System, Southern Pacific Railroad. Bro. Phillips is now running an engine out of Sparks, Nevada. I held a very good meeting with Lodge 19, Sparks, on the afternoon of June 22d. This lodge was formerly at Wadsworth, Nev., but when the division was moved to Sparks the lodge was also moved. Lodge 19 is getting along fairly well at the present time. We hope that when matters shape themselves that this lodge will be as good as in the days gone by. While in Sparks Bros. Stout and Hoyt made my stay at that place pleasant.

On June 23d at 9:30 a. m. I held a good meeting with Lodge 607 at Carlin, Nev. This was the first time that I had visited this lodge since I organized it in April, 1902. At that time the lodge was in Winnemuco, Nev., but it was thought best to move it to Carlin, where the members could attend lodge meetings more often. I am pleased with my visit to Carlin and feel certain that it will result in great good.

On the morning of June 24th I crossed the great Salt Lake on the Southern Pacific Railroad which is known as the Lucin Cut-off. This is one of the great sights to see in Utah—a wonderful feat of engineering—twelve miles of trestle in the lake, besides many miles of fill on either side of the trestle. Great Salt Lake is a wonderful body of water. It is said to be 20 per cent. salt. There is not a living thing in it, either animal or vegetable. The lake is receding and it will be only a matter of time until it will dry up.

On Sunday evening, June 25th, a joint meeting was held between Lodge 98 and L. S. 173, Ogden, Utah. This was one of the best joint meetings that it has been my pleasure to hold in a long time. The meeting was called to order by Sister Carr. A nice program had been arranged, which added to the other things made the evening a memorable one. The evening was concluded with refreshments which were enjoyed by all.

On Monday, June 26th, I held a joint meeting with Lodges 178 and 670 in Salt Lake, Utah. I found the lodges in good condition and the members feeling in good spirits.

On June 27th I arrived in Block Rock, Utah, accompanied by Bro. Chas. Snyder, of Lodge 218, who assisted in organizing Lodge 679. I was met at the train by Bro. Geo. Rhine, formerly a member of Lodge 88, Eavanston, Wyo. On the afternoon of June 27th we succeeded in organizing Lodge 679 with twenty charter members. The lodge was organized in a tent erected by the charter members for this special occasion, there being no other place in Block Rock to organize a lodge in. Block Rock is a new division point on the San Pedro, Los Angeles and Salt Lake Railroad. There are only three or four houses in the place at present. Should the division point remain there the place bids fair to be quite a city in time. Bro. Geo. Rhine was elected Master, and no mistake was made in placing him in this responsible position. Bro. D. M. Richardson was elected Collector, and no sooner was he installed in office than he went after the members to dig up their current quarter's dues. I am more than pleased with my reception in Block Rock by the brothers and wish them every success in their lodge work.

C. W. Maier.

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Fourth Vice Grand Master.

Starting out from Chicago for a trip over the Chicago and Great Western, I made my first stop at Clarion, to meet with the members of Lodge 658. When we take into consideration that this lodge has been organized only about a year, and find that during that time they have assisted in procuring a new and satisfactory schedule, paid a worthy brother's expenses in the hospital for some time, sent a delegate to represent them at the last convention, and now have their books in excellent shape and balanced on the right side, it proves there are Brotherhood members in that lodge and an efficient set of officers at the helm.

A special meeting was held in the interests of Lodge 574, at Oelwein, that was fairly well attended. From facts and evidence I find that this lodge has just passed through a hard struggle by not living up to the constitution and compelling others to do likewise, but with their past experience, a new set of officers, books properly audited, and more interest taken by all the members, there is no doubt but in a short time this lodge will resume its former good standing.

On going to St. Joseph, Mo., I found a meeting arranged with the members of Lodge 565, at which a number were present, and important business transacted to the benefit of the members of this lodge. With a small membership and being too kind-hearted in the past, besides a certain amount of disinterestedness, and not all eligible members enrolled, they have had some trouble in keeping this lodge together, but with the new contemplated changes and close adherence to our Constitution, I believe they will have one of the model lodges of that State.

Leaving St. Joseph, I went to Des Moines to meet in special session with the members of Lodge 102, and was pleased to see so many present, as the weather was extremely warm and there were other attractions in the city. From observation and information I was agreeably surprised to find this lodge in such a good financial condition, after their experiences with the 1900 convention. I also noted that the members are well up in every detail of our secret work, which speaks well for the officers and members alike. Visiting brothers would find it profitable to attend the meetings of this lodge and see business conducted in a systematic manner.

On arrival at Dubuque I had the privilege of attending a meeting of Lodge 322, and was surprised to learn that through some dissatisfaction, and perhaps personal feeling, this lodge had not prospered as it might have done the past year, but now, on the eve of a new election, together with a thorough auditing of the books, and more interest manifested by all concerned, there is no reasonable excuse why it should not be one of the best lodges on that system within the next six months.

In Chicago I had the privilege of meeting with Lodge 2, and found a fair representation present. As this lodge had been called to bear a heavy expense through an accident to one of its members, and not complying with the constitution by carrying careless members, they found themselves balancing their books on the wrong side, but now they have gotten into line and are going to turn over another leaf in their history. I have every reason to believe that this will soon be one of the standard lodges of the city.

Being home for a couple of days to visit my family, I attended the regular meeting of Lodge 38, and was more than pleased to see so many new members present. Having been a member and regular attendant of this lodge since the early part of 1882, and now finding so many new faces in place of the old, familiar ones, I could not but realize the truth of the statement that time waits for no man, and maketh many changes.

My next visit was to Escanaba, for the purpose of having Bro. Houghton examined for his disability, and while there to meet with the members of Lodge 129 in secret session. As usual, I found this lodge in excellent condition and up to date in every particular. If all our members were as much interested in lodge work as the members of Lodge 129 there would be no cause for complaint.

Stopping over in Gladstone, I was unable to meet with as many of the members of Lodge 494 as I expected, for business is good on the "Soo" Line, and employes are at a premium during this season of the year, but with those who were not on duty a pleasant, and, I hope, a profitable time was spent. No complaints being made, I concluded all was well with this lodge.

On account of Lodge 420 being returned from Durand to Owosso (the place of its birth), and having several candidates to initiate, the 17th and 18th were set aside as Brotherhood days in that city. Two successful meetings were held and five added to their membership. The members now believe that, as they are all stationed at one important center, and having better facilities to hold regular meetings, the future of this lodge will be better than the past.

The Grand Trunk Joint Protective Board being in session at Toronto, for the purpose of arranging a new schedule, I availed myself of the opportunity to be present and render any assistance that lay in my power. I sincerely hope that the officers of this company will appreciate the reasonable requests and past satisfactory services of their employes by increasing their wages and bettering their conditions, so they will compare favorably with other competing lines in this section of the country.

It was with feelings of regret that I journeyed to Detroit for the purpose of having Bro. M. M. Miller, an active member of Lodge 159, examined for his disability. Our delegates at the Buffalo Convention will remember him being present and asking for a position in some other section of the country, where the climate would be better suited to his constitution. Through the kindness of Grand Master Hannahan and Bro. Thomas Burke, of the Santa Fe, a situation was secured in Colorado, but after several months' experience in that country, and finding no improvement in his health, he returned to his native city.

Brothers, as we now enter upon a new year in the history of our organization, let us put forth special efforts to increase the membership of our Order, and live strictly up to the laws laid down in the Constitution, so that when we meet in Milwaukee in 1906 we will have 60,000 members enrolled under our banner and our organization second to none on this continent.

Eugene A. Ball.

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Correspondence

Notice.

All letters or communications intended for publication in the Locomotive Firemen's Magazine must be accompanied by the name of the writer. If the writer of an article for publication desires that his or her name be withheld, such request will be complied with, but the correct name and address of the writer must be furnished this office as an evidence of good faith, otherwise no attention will be paid to same.

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Lodge 679—(Member, Block Rock, Utah.) This lodge was organized June 27, 1905, by Bro. C. W. Maier, Third Vice Grand Master, with a charter membership of twenty. I take pleasure in introducing our lodge through the columns of the Magazine, and hope as time goes on the readers of the Magazine will hear from us occasionally. Block Rock is a little village on the Salt Lake Railroad, one hundred and eighty-two miles west of Salt Lake, and is situated in a beautiful little valley surrounded on all sides by mountains which are covered with snow the year round. The main sport is fishing and hunting, and if you don't believe it, just ask Bro. Maier.

Our goat is young in lodge work, but old in years. He was captured on the desert a few weeks ago. The candidates surely get the worth of their money.

Bro. Maier gave us much good advice and instruction. We sincerely hope and trust he will be able to visit us again soon.

Now, brothers, of Lodge 679, let us put forth every effort to elevate our organization to the highest possible standing, be prompt in paying our dues, and attend all meetings as far as possible, as by so doing we will have the satisfaction of knowing we are true to our obligations and have the welfare of the Brotherhood at heart.

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Lodge 8—(Member, Denison, Texas.) On July 3, 1905, Lodge 8 and L. S. 51 held a joint installation of officers. The following officers were elected: Bros. Chas. J. Adams, Master; R. E. McDonald, Vice Master; E. O. Johnson, Secretary; G. A. Wesen, Treasurer; G. L. Sherrill, Collector; members of local protective board, Bros. Chas. J. Adams, chairman, L. Hansom and O. H. Muncie; legislative representative, Bro. Adams; Board of Trustees, Bro. O. M. Gilbert; Medical Examiner, Dr. Rutledge. The election of Bro. Adams as Master was something of a surprise, as he did not expect or want that honor, having his hands full as chairman of the local board and secretary of the Joint Protective Board of the M. K. T. System. Bro. Johnson has been Secretary for two terms and this will make his third term. Bro. Wesen was elected Treasurer for the second time. Bro. Sherrill was elected to succeed himself as an endorsement of his official career. The past year has been a prosperous one for our lodge. Heretofore it was necessary to levy assessments during the year, but this has been avoided by the officers exercising careful judgment in the handling of funds. Lodge 8 is the largest organization in Denison, having a membership of two hundred and sixty.

In connection with the above mentioned as elected, the following appointive officers were installed: Bros. Wesen, Warden; J. F. Harrell, Chaplain; O. V. Russell, Conductor; John McKee and Thomas Mullikin, Inner and Outer Guards.

For Lodge 51, Ladies Society, the following officers were installed: Mrs. C. I. Turner, President; Mrs. May Gensel, Vice-President; Mrs. Elizabeth Robbins, Past President; Mrs. Maude Morefield, Secretary; Mrs. Hattie Smith, Treasurer; Mrs. Allie Cowan, Collector; Mrs. Annie Wright, Chaplain; Mrs. Belle Parks, Warden; Mrs. Mamie Hanson, Conductor; Mrs. Maggie Davis and Mrs. May Ellington, Inner and Outer Guards.

After the ceremonies of installation were completed, the ladies entertained with a well selected social program, after which refreshments were served, and as this has been a prosperous year for both Orders, this meeting was made a sort of celebration, and until the "wee sma'" hours of the night did the celebration go on. When the fragments were gathered together those three old Roman brothers, Wesen, Turner and Sherrill were found in the "attics" touching the fantastic toe to the air of "Yaller Cotton Picking," "Old Rosen the Bow" and other tunes so near and dear to the hearts of old timers. At a late hour all were thrown into consternation. Quick investigation disclosed the fact that it was only Bro. E. N. (Shorty) Wright practicing that melodious voice of his on that old time stanza, "O! gimme, O! how I wish you wo'd, that wa'er mel'n smilin' on de vine." All-and-all we had a very nice time, as is always the case when our two lodges come together in joint meeting. Both are in a prosperous condition and all are glad.

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Lodge 392—(A. L. Baker, Allegheny, Pa.) Twice in one year has the Grim Reaper, Death, visited our lodge and taken two of our brothers. On April 14, 1905, Bro. Harry E. Viegle died at his home at Lilly, and his funeral was attended by nineteen members of our lodge. So many friends turned out at the funeral that the little village church would not hold all who came. The floral offerings were very beautiful.

On June 9, 1905, Bro. Leroy R. Cooper was called to go out on a regular run he was firing, and before he reached his journey's end the train left the track on a curve and headed into the hillside, killing Bro. Cooper. Brakeman Beatty was scalded so badly that he died the next day, and Engineer Humer sustained a broken leg and a few more minor injuries. The funeral of Bro. Cooper was held on Sunday, June 11th, and he was laid to rest on Monday. A large number of our members attended. Lodge 392 will certainly miss the happy faces of the two departed brothers.

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LODGE 449—(Member, Cleburne, Texas.) Our lodge is still in the ring. I take pleasure in announcing the marriage of our worthy Secretary, Bro. A. C. Lang, to Miss Frankie Dayton. We wish them both a long and happy life. Lodge 449 is proud of her salaried Chairman, Bro. C. M. Rodgers. He took his office May 1st, last, and there has been a change in business all the way round. He is the best grievance man you ever saw. He never takes a grievance up before the officials that he doesn't win. He is Chairman for the G. C. System, and all the boys along the line are proud of him. Bro. Frank Bortin is reinstated and back from California with a smile on his face.

Our division master mechanic, Mr. F J. Carson, who has been with us for the last three years, has accepted a postion in Alamagordo, New Mexico. We hate to see him leave. All of our engines are oil burners except five or six, and they are in the pool, and the extra boys scrap over them.

Bro. Roy Price was married the first of June. We wish both he and his wife long life and much happiness.

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LODGE 45—(O. C. Hille, Little Rock, Ark.) Here we are again from away down in Arkansaw (now laugh). Lodge 45 has surely done her part toward the growth of our noble Order. Since July 1, 1904, until June 30, 1905, we have taken in seventy-five new members and have eight applications on hand which have been balloted on. On May 28th, last we gave a picnic and dance at Forest Park and everyone had a fine time. During the evening many who were unable to attend during the day came out and took part in the dancing. Bros. J. M. Brickhouse, H. C. Shepherd, L. P. Piror and O. C. Hille composed the arrangements committee; Mrs. H. C. Shepherd, Mrs. J. E. Harrison and Mrs. J. M. Brickhouse were the reception committee, and the floor committee was composed of the following: Bros. John Breiback, E. L. Rehemer and Walter Erwin.

Bro. J. A. Leach, the founder of the B. of L. F., better known as "Pap," was with us and he was well pleased with the time he had. At 4:00 p. m. Brother and Sister Shepherd were seen getting on the street car with two heavily laden baskets. What was in them any brother can guess. I am proud to say that the help we got from the sisters was highly appreciated and it helped make our picnic a success.

On Monday, June 26th we held our election of officers and we certainly had a large attendance. Bro. Shepherd was re-elected Master and Collector; Bro. Brickhouse was elected Secretary and will handle the quill and also the troubles for the boys as Local Chairman; Bro. T. P. Howard will keep his eyes on our loose change. I wish our officers good luck and hope that all the brothers will give them their full support. We had with us last meeting night one of Lodge 45's old standbys, Bro. H. G. Whitmore, who has quit road service and will open an up-to-date dental parlor at the Mann Building, suites 23 and 25, at 111 E. Fifth street, Little Rock, Ark. Now is the chance to have your teeth fixed, for he even fixes saw teeth. Good luck, to you, brother.

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LODGE 77—(Member, Humboldt, Kas.) With eagerness I look forward to the arrival of the Magazine at the beginning of each month. Even though far from my home and out of the railroad service, it brings back that feeling which is alone experienced in the B. of L. F. It brings back a longing to be amongst the members who are privileged to attend the meetings, and yet so many reports every month show that members do not avail themselves of the opportunity. I eagerly glance over the letters, but very seldom do I find a letter from Lodge 77. Brothers, why not devote thirty minutes of your time in writing a letter to the Magazine? You have nothing in your lodge to be ashamed of, but have members who stand high, both in political and social ranks. You that are in easy reach of the lodge room have no idea of the eagerness with which the leaves of the Magazine are turned with the expectation of finding a "letter from home," and why deny the privilege to at least one-third of the two hundred members whose names appear on your roll? Let me assure you, my brothers, that each one of the many members which constitute Lodge 77, though scattered in all directions throughout the States, are looking with the same desire as myself that the many willing workers with which she can pride herself at least will volunteer and respond to the call of a brother in the wilderness; if so, it is to be called yet the beautiful Sunflower State possessing charms not to be found elsewhere.

A year and a half has rolled by since I left, and as yet I have not reported how fortune has favored me since locating in the oil fields of southern Kansas. At present things look gloomy, but they surely will brighten up in the near future. I believe it is only a matter of time until train loads of fuel oil will leave this part of the country daily, as arrangements to that effect are partly under way now, but for the last six months all developments had stopped, owing to the alarming fall in the price of oil.

Those brothers that find it burdensome to attend meetings should ask themselves the same old question which always remains true and new, "Who has bettered our conditions and raised our wages?" The answer remains always the same, "The untiring efforts of the Brotherhood," and again often the assertion is made by members who shun the lodge room that the lodge is run by so and so. If the lodge is not run according to the Constitution, why don't you see that it is? It is your duty to live up to it, also, and see that it is adhered to by others. By all means assist the officers which you have so recently elected and help them, in place of staying at home and then criticising their work. Give this method a trial before you condemn it, brothers, and you will find more truth in it than you think for.

In conclusion I wish to say to those lodges that are blessed with good attendance, do not neglect to openly credit your members through the columns of the Magazine and give a hint once in a while as to how your conditions were improved so that other lodges may receive a helping hand.

Lodge 214—(Member, Baltimore, Md.) In reference to the great exposition which was held in St. Louis in 1904, would say that many of the brothers and sisters who visited it brought home beautiful souvenirs which they keep either on their parlor cabinets, dining-room tables or any place where they will make the home cheerful; but, brothers, Bro. Harry E. Redmiles is more choicy than the majority of the people in choosing souvenirs. As for him and his wife they have chosen a fourteen-pound baby girl, just a few days old. Bro. Redmiles is naturally inclined to be quite large in both size and idea. However, his ideas run short of his size as to what they would have been had it been a baby boy. He and his wife are both proud of their new arrival, and let us all hope and wish them the best of luck in raising her and may she grow up to be a very good and intelligent young lady.

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Lodge 214—(H. S. Shaeffer, Baltimore, Md.) It is with profound sorrow that I announce the death of our esteemed brother, J. J. Ledger. I think it an honor and a task of friendship to commemorate the death of one so worthy of our love and pay a tribute of respect to our departed brother. His death was caused by a head-end collision near Patapsco Station on the Western Maryland Railroad about six miles from Westminster, Md. The collision was between a passenger train and a double-headed freight train, which caused the death of three engine crews and several others. Bro. Ledger was firing the passenger train and was scalded to death. I want to say right here that Bro. Ledger was a dutiful boy to his parents. He leaves a heart-broken father, mother, sisters and brothers. He was the main support of the family. The members of our lodge and the sisters showed their appreciation of him by attending his funeral in a body, and by placing on his casket a beautiful floral design in the shape of a cross, which covered the entire length of it. The brothers of our lodge extend to his parents and relatives their heartfelt sympathy.

Bro. Ledger was a good Brotherhood man and it was always a pleasure to meet him in the lodge room and have a pleasant chat with him. He was one of our best and most willing workers. No matter what question arose, Bro. Ledger was ready and gave his opinion of the case in the light in which he saw it. There is a vacant chair in our lodge room that can never be filled. We will miss his pleasant face and his intelligent support.

Just a few months ago our lodge bought a set of new regalia, of which Bro. Ledger was heartily in favor. Little did we think that the regalia of which he was so proud would be used for the first time on the sad occasion of his funeral.

In conclusion permit me to say that his father and mother have expressed themselves as follows: "Isn't the Brotherhood a noble and kind-hearted body of men, and may God bless them in all their doings and may they forever exist."

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Lodge 304—(W. F. Smith, Argenta, Ark.) Brother Bernard Carroll, a member of Lodge 519, B. of L. F., and a member of the B. of L. E., was killed recently at Hartman, Ark., 107 miles west of Little Rock, on the Central Division of the Iron Mountain Railroad. The train was moving along the passing track at Hartman and was going at a speed of not more than four miles an hour, when the engine climbed the rail and apparently began to topple over. Bro. Carroll immediately applied the brakes and took his place between the tank and engine on the lift side, getting ready to jump should the engine turn over completely. This was the worst position he could have taken, as the engine fell toward the left, pinning him between the tank and engine. In this terrible position Bro. Carroll was held for nearly forty minutes before he was liberated and taken to a nearby hotel, where he died a few hours later. He certainly gave a rare exhibition of nerve and heroism after the accident, for he directed the men who were working to liberate him, and would not allow any message to be sent to his wife for fear of frightening her. He leaves a wife and four children. He was a capable and efficient engineer. The B. of L. E. had charge of the funeral.

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Lodge 265—(F. J. Hall, Grand Rapids, Mich.) One of our beloved members, Bro. Elmer A. Deo, died on June 1, 1906, of smallpox. He was 22 years of age. Bro. Deo was employed on the Pere Marquette Railroad. Seven of our members accompanied his remains to its last resting place at Berrien Springs, Mich. They were Bros. O. S. Richardson, Master; L. Yeakes, Chaplain; E. Eagen, C. Richardson, E. Nelson, G. Hertser and L. Gillmore. The funeral services were held in the M. E Church, Saturday, June 3d, at 10 a. m., conducted by Rev. J. A. Blickenstaff, pastor of the U. B. Church.

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Lodge 431—(W. B. Wheaton, Ionia, Mich.) The illustration herewith is of engine 57, wrecked on the morning of June 6, 1906, on the Pere Marquette Railroad, just out of Ionia. The buildings shown in the distance are those of the Michigan State Reformatory. Brother Alvord was found under the cylinder and smokebox, while Joyce Payne, his fireman, lay clear of the wreck beside a tie on the bank. Where the cable is shown the coach ahead of the engine broke away and rolled twice over, stopping near the fence, and bruising Conductor Chas. Sanger, of Division 385 O. R. C., which caused him to be laid up for a few days. Brakeman Tim Coffee and Anthony Omella, both of Lodge 432, B. of R. T., were severely injured, but not fatally. Bro. Omella sustained a broken shoulder blade, and Bro. Coffee a deep cut in the back of the head.

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Lodge 111—(Member, Mattoon, Ill.) Recently eight of our boys were called up for promotion and all were successful in passing the examination, which they have been striving for for some time. However, on account of business, they are still spading the black diamonds into the hungry mouths of the big seven hundreds, hoping to soon get revenge on some of their weary brothers who follow them for promotion in the next class. The St. Louis Division isn't the worst in the world, for they all have their ups and downs. At the present writing we have good means provided for getting in and out of the terminal on our arrival or departure, which makes it very convenient after a fifteen or twenty hours' trip. This gives us more time with our families, our homes and our sweethearts.

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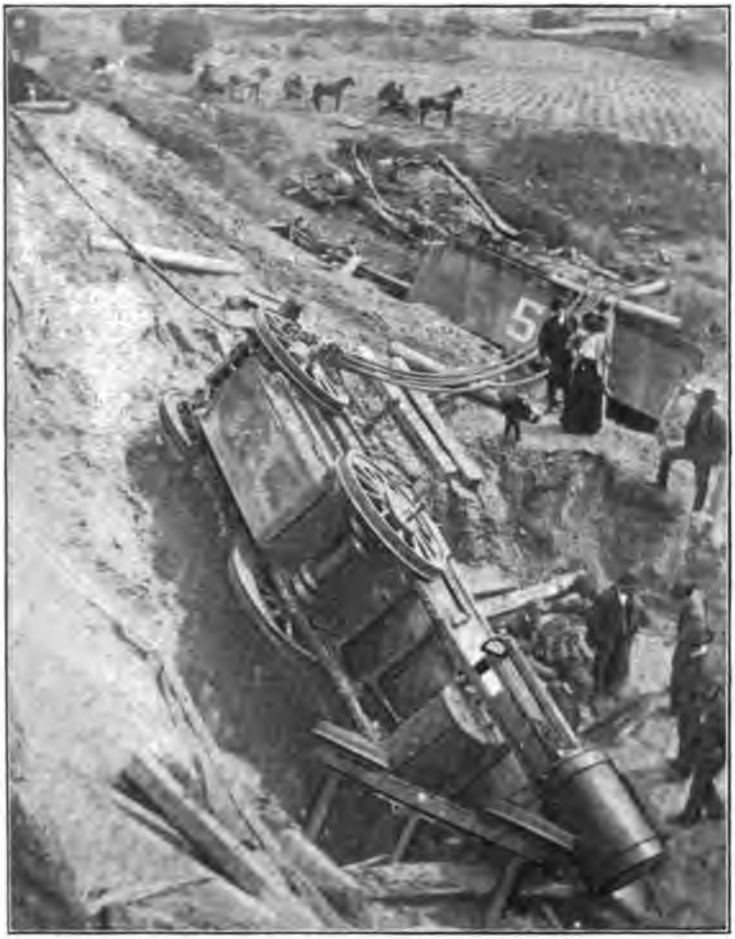
Lodge 226—(F. H. Morris, Ennis, Texas.) I have been a close reader of the Magazine for some years and enjoy reading the letters from the members from all over the United States. We are still holding our meetings on the first and third Thursday nights in each month. Would like to have all traveling brothers that could give us a call visit us. Our goat is still in good shape. We have to use him every now and then, and he shows the candidates a good time. We have a nice lodge with all working members, and all take a good interest and come out whenever they can. One of our brothers (A. Dedrick) had the misfortune to lose his home by fire. We all feel sorry for him, as he had just started out in life and loses all. Our election is over with and our former Master, Bro. L. Ryan, was elected again. The members of Lodge 226 will never be able to repay Bro. Ryan for his kindness and promptness in attending meetings. He is always in his chair and ready to do or say anything for the good of the order. Bro. Nichols, our Secretary and Treasurer was re-elected. He has held the place for a number of years. It would be hard to have to give up such a good officer, and I am sure the old lodge would feel lost without our dear Bro. Nichols.



WRECK OF ENGINE 57 ON THE PERE MARQUETTE RAILROAD, NEAR IONIA, MICH., JUNE 6, 1905

I have read letters from other lodges where they tell their troubles. I am satisfied we boys have no kick coming, only we pull 'em. We have good coal, medium-sized engines, divisions 111, 106 and 110 miles. We run first in and out of Ennis, northwest and south, and scarcely ever make any overtime. I would like to see the boys of Lodge 226 take a little more interest in writing to the Magazine. I will look to see if this will not break the ice and more letters be forthcoming. The visit Bro. Maier made us some time ago will never be forgotten, as it was one to be remembered.

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LODGE 208—(F. A. Haynes, Susquehanna, Pa.) I am glad to state that we are gaining in membership every day. The new class of half-deck engines we have on the Erie are very hard to fire, and the heat is intense. The capacity of these engines is 2,500 tons, and this, coupled with the very low grade of coal that we are furnished, makes it a little unpleasant. We are glad to see Bro. Hannon around again and hope that he will soon be able to resume his duties. There has been a call for seventeen of the boys to prepare for promotion, and we heartily wish them success. Bro. Chalker has been so busy of late that he has had little time to amuse his bouncing baby boy. We wish all brothers success and hope to see our Order continue to grow.

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LODGE 98—(W. S. Cartwright, Ogden, Utah.) On Sunday, June 25th, last, Bro. C. W. Maier, Third Vice Grand Master, addressed a joint meeting of our lodge and L. S. 176. As our Master was absent, Sister Case presided. The meeting was well attended by the ladies, but as most of the boys were out they were not well represented. The sisters gave a short, but well-selected program. Bro. Maier gave one of his always cheering and inspiring talks. Refreshments were served and a social hour with our sisters was much enjoyed.

Business is a trifle dull here this month, but as many regular men are laying off, we are kept quite busy.

Our new officers are now installed and we are congratulating ourselves on having such a list. Bro. Howard Bateman was re-elected Chairman of the Local Protective Board. He has done good work in the past, and we wished to show our appreciation by re-electing him. We have initiated three new candidates in the past two months and expect more in the near future.

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LODGE 110—(Member, Bucyrus, Ohio.) As this was meeting day (July 9th) and we had a splendid meeting and quite a large turnout, I will let the brothers know about it. Some of our members forget to come to the meeting. If you come you will not be initiated again. This was installation day and some of the newly elected officers were installed. Some were out of town, and so, of course, could not be installed at this time. We have changed our meeting time to the second Wednesday evening, at 7:00 o'clock, and the fourth Sunday at 2:30 p. m. of each month. Do not forget the dates, brothers; come early and get a front seat. We meet in the B. of L. E. hall.

Well, a cyclone has struck the "garden spot" of the world, that is, in Bucyrus the bottom has dropped out of business on the T. & O. C. and struck a hard blow to fourteen of our young runners, principally "hood" men. It took seven engineers out of business and the boys have long faces and are all discouraged—you can not blame them for feeling blue. Bro. George Rauh, one of the number, has accepted a position at Carroll's foundry and machine shop. He is a machinist—good luck to George. Bro. Herman Kuebler has been transferred to Toledo to work. We hope it will not be for long, as we like to see his smiling face in the lodge room. The K. & M. Division of the T. & O. C. had a head-on collision between a passenger train and switch engine at Glouster, and killed the engineer on the switch engine. His name was Hallday. I hope when you hear from us again we will all have plenty of work.

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LODGE 462—(F. M. Roath, Erie, Pa.) It is with much sorrow and regret that we announce the death of our beloved brother, Charley M. Souers, who met instant death in a collision between an extra passenger train and a helping engine on Clarendon Hill, about two and one-half miles east of Warren, Pa., on May 11, 1905. Bro. Souers was called in the morning of May 11th to fire a special passenger train from Erie to Kane, a distance of 95 miles, the train being a chartered one en route to Washington, D. C. The run was made successfully in two hours and fifteen minutes. When returning from Kane as an extra and running at a very high rate of speed, they collided with a heavy helping engine which had broken down, causing them to stop. Before the crew of the helping engine could protect themselves the extra crashed into them. Bro. Soures was caught between the tank and the engine, crushing out his life.

The funeral took place from the home of his parents, at 854 E. Nineteenth street, and from St. John's Church. The funeral was a large one, showing the esteem in which our beloved brother was held. Though parted from us, his memory will be fondly cherished by the members of Lodge 462 for many long years to come. The officers and members of our lodge extend their heartfelt sympathy to the heartbroken parents, three sisters and two brothers.

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LODGE 535—(S. G. Lucas, Chicago, Ill.) The fiscal year ending June 30, 1905, being the "banner" year since this lodge was organized, May 25, 1898, I take pleasure in giving you a short history of each year up to June 30, 1905. Our lodge started with ten members, and during the year 1898 there were 16 new members taken in, making a total of 26 members for that year. In the year 1899 there were ten new members initiated and in the same year there were 16 members expelled and 6 reinstated; total number, 26. In the year 1900 there were 11 new members initiated and 5 expelled; total for that year 31. For the year 1901 there were 10 new members initiated and 5 expelled, 2 reinstated; total for the year, 42. In 1902 there were 12 members initiated, 4 expelled and 3 transferred; total for the year, 47. For the year 1903 there were 7 new members initiated, 4 expelled, 1 withdrawn and 3 transferred, 1 death; total 45 members. For the banner year, 1904, beginning June 30, 1904, and ending June 30, 1905, there were 34 new members initiated, 7 accepted by transfer, 1 death, 3 transferred, 4 expelled; total members for the year, 78. This certainly speaks well for the earnest support and interest the members have taken in the welfare of the lodge. I would be pleased to give you the financial standing of the lodge, but the Treasurer being out of the city at the present writing, I am unable to do so. I can assure you that the lodge has quite a nice sum in its treasury for the year, and has equipped itself with paraphernalia which it never had before. We have 10 new applicants for membership at the present writing which we hope to have enrolled on our register at the first opportunity, and the officers of this lodge during the banner year were Bros. James Galligan, Master; S. G. Lucas, Secretary; H. C. Sriner, Collector; H. S. Stollard, Deputy Collector; James Hackett, S. G. Lucas and Samuel Rutherford, Board of Trustees. I earnestly hope that the ensuing year will see an increased number of members over the "banner" year. This certainly can be accomplished if all members give a helping hand.

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Lodge 602—(E. Watrous, Shawnee, Okla.) Business on the old Choctaw at the present time is not quite as brisk as it might be, but at the same time it is good enough to keep us going pretty steadily. A very wet season spoiled our potato crop and our hopes, too, but we still count on wheat to make business boom for everybody.

About a dozen of the brothers of our lodge were notified a short time since to be ready for examination, and if I am not greatly mistaken a few of them are, as I write this, wondering what is coming next. We certainly wish them success and plenty of it. We are going to keep tab, and in our next letter will let our absent brothers know whom they shall address as "Mr. Engineer."

I am sorry to say that Bro. P. F. Harmon, our genial roundhouse foreman at Shawnee, is suffering with appendicitis at Eureka Springs, Ark. He has had somewhat more than his share of sickness and this later affliction falls heavily. We trust it will not be long until we have him with us again, for we miss the absent ones of Lodge 602.

Our annual election was held June 22d, and, of course, was an exciting event. Would say that outside of our Secretary and Treasurer we have a good lot of officers for next year, but as we do not deem the word "good" sufficient to describe our faithful Secretary and Treasurer, Bro. W. L. Blessing, we say that he is the best. Since our organization Bro. Blessing has been Secretary and Treasurer, and, although many a good man has camped on his trail, none have ever been near enough to see his smoke. I am speaking from experience when I say this, for long before I was out of the first block Bro. Blessing was in the "home" with plenty of space, and we intend to keep him there as long as he will stay.

In closing, would say that I greatly enjoy the correspondence department of our Magazine and am trying to do what I can for Lodge 602 to make it interesting, and would like to see a member of each lodge do the same. I often wonder what has become of Lodge 404, where I was made a B. of L. F. boy. Let us hear from you, Lodge 404. There are several of your old members far away that would be glad to hear from you.

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Lodge 590—(J. L. Thompson, Beaumont, Texas.) It is with deep regret that I announce the loss of three of our members by the hand of death within the short space of eight weeks. On April 30, 1905, Santa Fe engine No. 13, backing up as second engine in a double-header train, went through a bridge and turned over near Brookland, Texas. Engineer D. D. Barfield and Fireman E. W. Brocker were fatally scalded and died in a short time. Engineer Barfield was formerly a member of this lodge, but had recently joined the B. of L. E. The esteem in which Bro. Brocker was held by his brother firemen was shown when Lodge 677 was named in his honor. He was buried in Houston, Texas, under the auspices of the B. of L. F. and K. of P.

On May 30th engine 226, backing up from Athens to Stockard, where they were to turn on a "Y," turned over at Stockard, seriously injuring Engineer Wm. Gaines and Fireman John Hensarling. Bro. Hensarling was caught under the engine and had his jaw broken and his right shoulder badly injured, besides being badly bruised up otherwise. He was removed to St. Paul's Sanitarium, Dallas, Texas, where he was given every attention possible, and, after the third day, was considered out of danger, and hopes were given us of his complete recovery, but his injuries took a turn for the worse, blood poisoning setting in in his shoulder and arm, and on June 20th it was decided as a last resort to amputate his arm. He was carried to the operating room for that purpose, but died before they got him on the table. Though suffering terribly he held up to the last and died with a smile on his lips. His remains were brought to his home, and his popularity was shown by the attendance at his funeral of practically every man, woman and child in the little town, notwithstanding it was raining all the while. He was our Local Chairman, and since assuming the office has always been considered by our General Chairman as being the best local man on the system. He had always proved himself one of our best members, and was always ready and willing to do everything in his power to help a brother or promote the interest of the Order.

On June 19th Bro. M. C. Carter was instantly killed in a headend collision. He was putting in a fire at the time and never turned loose the scoop. His engineer, Joe Brown, was killed, and two brakemen injured, the collision occurring on a curve in a deep cut, and none of them had any warning of the impending danger until too late to escape. The collision was caused by a difference of a few minutes in watches. Bro. Carter had only been a member of the Brotherhood a short while. His remains were laid to rest at Lovelady, Texas, under the auspices of the B. of L. F. We wish to compliment our members at Jacksonville, especially Bros. W. F. Tucker and C. F. Guynes, for the promptness with which they look after cases of distress on that end of the road.

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Lodge 533.—(Thomas Crago, Calumet, Mich.) The following list of amounts have been contributed to our lodge to assist the Houghton County Street Railway Union in its fight for recognition: Lodges 182, $2; 24, $2; 147, $1.50; 263, $2; 381, $2.50; 473, $1.75; 410, $2.15; 216, $1; 123, $2; 488, $2; 606, $1.50; 100, $2; 115, $1; 651, $2; 301, $2; 521, $5; 127, $1.61; 157, $1; 305, $1; 472, $2; 350, $1; 44, $3; 3, $1.73; 614, $1; 196, $2; 451, $1.10; 543, $2; 99, $1; 324, $2.50; 597, $3; 566, $3; 314, $2.75; 567, $2; 434, $2; 168, $2; 107, $2; 262, $2; 474, $2; 387, $5; 151, $3.70; 67, $2; 276, $2; 86, $1; 204, $5; 633, $2; 648, $3.40; 511, $1; 638, $1; 212, $2; 416, $1; 242, $1.

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Lodge 54.—(Member, Moberly, Mo.) I know that there is not a member of our lodge away from home that does not enjoy an occasional letter from us, although in writing at this time it will be difficult to say that the past few months have been as we would wish them to be. While we have been prosperous in a financial way, we have had sickness and misfortune on the other hand. On June 10, 1905, Bro. Burbridge had the misfortune to lose his left hand while on duty as head brakeman. He was setting out a car at Huntsville, Mo. After cutting out a car he made an attempt to climb up and set the brakes, when the handhold slipped and threw him under. Bro. Burbridge carried $3,000 insurance in the Brotherhood. Bro. L. K. Jessup, who has not been in good health for some time, is now confined to the hospital very sick.

At our annual election held on June 29th, Bro. Sam Sparkman, the old warhorse, was re-elected Master and elected Treasurer and Legislative Representative. The writer would suggest that before the next election Sam be given a grand office, as we know of no other way to sidetrack him. Brothers were elected as follows: R. C. Gwinn, Secretary; E. L. Kirkendall, Collector; F. McClain, Vice Master and Chairman of the Western Division Protective Board: Anthony Williams, Chairman of the Eastern Division Protective Board, and J. J. Connelly as local board man.

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LODGE 409—(H. A. Van Brunt, Princeton, Ind.) On June 13, 1905, we received the sad news of the death of Bro. J. D. Johnson, who met death by accident in a wreck at Golden Gate, Ill. His remains were interred in the Catholic Cemetery on June 14th in accordance with burial ceremonies of the Catholic Church at Huntingburg, Ind., of which church he was a member. In the death of Bro. Johnson his wife has lost a true and affectionate husband, his parents a dutiful son, and his brothers and sisters a kind and loving brother. The members of our lodge extend their heartfelt sympathy to all of his relatives in their sad bereavement. At a meeting held recently by our lodge appropriate resolutions were drawn, a copy of which was sent to his wife and another spread upon the minutes of our lodge.

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Official

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

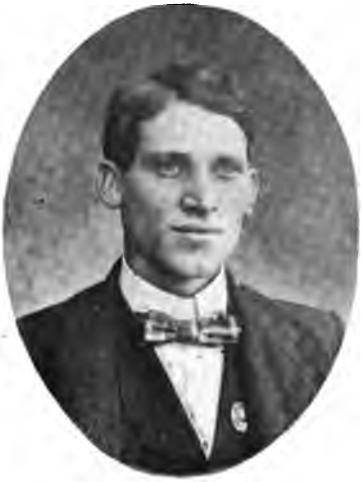
Charles A. Werle.—Has not been heard from since January 3, 1899. At one time he was in the employ of the Atchison, Topeka and Santa Fe Railroad, also the Missouri Pacific. He lived in Texarkana, Texas, but just when is not known. He is one of the heirs of the Anthony Werle estate, and the executor of same is anxious to locate him. Any one having any information concerning him will kindly address Peter Paul, care of Peter Paul & Son, 136 North Pearl street, Buffalo, N. Y.

Oliver H. Flowers.—Is a member of Lodge 602, B. of L. F., in good standing. When last heard of was in Solomon, Alaska, which was October, 1904. At that time he had been in Alaska over a year. Any one knowing his whereabouts or anything concerning him will please correspond with W. L. Blessing, Secretary Lodge 602, B. of L. F., Box 332. Shawnee, Okla.

Albert Nichols.—When last heard of was in North Dakota somewhere. Is about 23 years of age; is dark; has brown eyes; is about 5 feet 5 inches tall and is rather heavy set. His relatives are very anxious to hear from him. He is a member of Lodge 407, B. of L. F. Any one knowing his whereabouts or any information concerning him will please communicate with Benjamin T. Hart, Secretary Lodge 407, B. of L. F., Box 378, Seattle, Wash.

Chas. N. Robb.—At one time he fired on the Frisco System. Has not been heard from for three years. At that time he was working for the Frisco at Ft. Scott, Kans. He was in the employ of that company only two months. He is 29 years of age. His sister, Mrs. Jennie Rodgers, is very anxious to hear from him. Any one knowing his whereabouts or any information concerning him will please correspond with Steele Campbell, member of Lodge 368, B. of L. F., 726 E. Elm street. Springfield, Mo.

Eugene L. Marvin.—Is a member of Lodge 477, B. of L. F. He left home on June 6, 1905, to look for work. He was seemingly in good health and spirits. His wife is worried and ill, and has been helped by the lodges of the city. He has brown hair and light blue eyes; a gold tooth on upper left side of jaw; is 5 feet, 7 or 8 inches tall. When he left home he wore a brown suit with white thread running through it, and a black soft hat; had no vest on; is 27 years of age. Any one knowing his whereabouts or any information concerning him will please correspond with his wife, Mrs. Blanche Marvin, 1425 North Fourth street, Quincy, Ill., or L. J. Sperry, Secretary of Lodge 330, B. of L. F., 18 South Boeke street, Kansas City, Kans.



EUGENE MARVIN

Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possion of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the Lodge which issued same:

A pocketbook containing receipts for quarter ending September 30, 1905, also receipts for three years back, $5.00 in money and picture of wife, belonging to R. D. Lamberson, member of Lodge 603. B. of L. F., was lost on the night of June 2, 1905. If found please return to Oscar Jones, Secretary of Lodge 603, B. of L. F., 609 North Morey street, Sherman, Texas.

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Acknowledgments.

The following persons desire to acknowledge receipts of payment of claims and to express their gratitude to the Brotherhood of Locomotive Firemen, as an organization, and to the individual members for kindness and courtesies extended:

Mr. and Mrs. Oscar Deo, Grand Rapids, Mich.

John Snoddy, Big Springs, Texas.

The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of June, 1905:

B. of L. F. Lodges 11, $12; 27, $12; 123, $12; 163, $12; 174, $12; 175, $12; 229, $10; 287, $10; 350, $10; 388, $12; 432, $12; 463, $12; 490, $5; 573, $10; 574, $10. Total	$163 00
L. S. to B. of L. F. Lodges, 59, $2; 134, $2. Total	4 00
O. R. C. Divisions	167 00
B. of R. T. Lodges	211 36
B. of L. E. Divisions	84 00
Station 4	85
Station 6, Freeport, Ill	2 50
Sale of junk	3 00
James Costello, Division 270, O. R. C	1 00
Rebate of freight bill	38 10
Joseph Messenger, of Lodge 100, B. of R. T	50 00
Grand total	$724 81

Miscellaneous.—Six camp chairs from Mrs. Frank Nessley, of Ogden, Utah, and from the Gold Medal Camp Furniture Co., of Racine, Wis.

Respectfully submitted,
JOHN O'KEEFE,
Sec. & Treas. R. R. M. H.

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Beneficiary Statement

OFFICE OF GRAND SECRETARY AND TREASURER,
PEORIA, ILL., July 1, 1905.

TO SUBORDINATE LODGES:

The following is a statement of receipts in the Beneficiary Department for the month of June 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	......	69	......	137	......	205	......	273	......	341	15 00	409	191 25	477	......	545	......	613	65 25
2	57 75	70	......	138	......	206	......	274	......	342	198 75	410	......	478	......	546	......	614	......
3	6 75	71	......	139	......	207	......	275	......	343	63 25	411	......	479	......	547	......	615	......
4	30 75	72	......	140	441 00	208	......	276	......	344	......	412	186 00	480	......	548	......	616	......
5	......	73	......	141	......	209	206 25	277	......	345	......	413	......	481	......	549	123 00	617	......
6	......	74	......	142	......	210	......	278	......	346	......	414	......	482	4 50	550	......	618	......
7	......	75	......	143	......	211	......	279	......	347	106 50	415	......	483	......	551	2 25	619	......
8	......	76	......	144	......	212	15 00	280	......	348	......	416	183 75	484	......	552	......	620	......
9	......	77	......	145	......	213	6 00	281	......	349	......	417	......	485	......	553	4 50	621	57 75
10	......	78	......	146	......	214	......	282	......	350	......	418	......	486	......	554	......	622	......
11	......	79	......	147	......	215	4 50	283	......	351	......	419	1 50	487	......	555	......	623	......
12	......	80	......	148	192 00	216	......	284	4 50	352	......	420	88 50	488	......	556	85 50	624	......
13	......	81	......	149	......	217	239 25	285	......	353	6 75	421	......	489	......	557	......	625	......
14	......	82	......	150	......	218	......	286	112 50	354	......	422	......	490	......	558	......	626	......
15	75	83	......	151	......	219	......	287	......	355	......	423	......	491	......	559	......	627	......
16	......	84	162 75	152	......	220	......	288	......	356	213 75	424	......	492	......	560	......	628	......
17	......	85	......	153	......	221	......	289	152 25	357	......	425	......	493	83 25	561	......	629	......
18	......	86	......	154	165 75	222	186 25	290	2 25	358	2 25	426	329 25	494	......	562	......	630	......
19	238 50	87	......	155	160 50	223	418 50	291	......	359	......	427	......	495	......	563	2 25	631	......
20	......	88	......	156	......	224	......	292	......	360	......	428	......	496	......	564	......	632	......
21	......	89	......	157	......	225	......	293	......	361	......	429	......	497	......	565	......	633	......
22	......	90	......	158	......	226	......	294	......	362	76 50	430	1 50	498	......	566	1 50	634	......
23	......	91	333 00	159	......	227	......	295	......	363	6 75	431	108 75	499	......	567	......	635	122 25
24	......	92	......	160	......	228	......	296	6 00	364	135 00	432	......	500	......	568	......	636	......
25	......	93	2 25	161	......	229	298 50	297	......	365	57 75	433	......	501	4 50	569	......	637	2 25
26	......	94	4 50	162	......	230	......	298	......	366	......	434	......	502	......	570	......	638	......
27	......	95	......	163	......	231	405 75	299	......	367	......	435	......	503	......	571	9 00	639	74 25
28	4 50	96	2 25	164	......	232	......	300	27 00	368	......	436	......	504	......	572	......	640	71 25
29	3 00	97	......	165	......	233	......	301	......	369	......	437	......	505	69 00	573	......	641	......
30	......	98	......	166	......	234	162 75	302	......	370	......	438	......	506	1 50	574	2 25	642	......
31	2 25	99	......	167	......	235	13 50	303	4 50	371	168 75	439	94 50	507	......	575	66 00	643	......
32	......	100	......	168	......	236	2 25	304	......	372	147 00	440	......	508	2 25	576	......	644	......
33	......	101	......	169	......	237	......	305	4 50	373	......	441	101 25	509	......	577	......	645	......
34	......	102	......	170	150 00	238	......	306	......	374	......	442	......	510	......	578	9 00	646	......
35	......	103	204 75	171	......	239	......	307	......	375	......	443	......	511	......	579	......	647	......
36	......	104	......	172	......	240	......	308	......	376	......	444	......	512	......	580	......	648	......
37	......	105	87 75	173	293 25	241	......	309	......	377	......	445	3 75	513	......	581	......	649	......
38	111 75	106	......	174	......	242	......	310	4 50	378	......	446	324 00	514	3 00	582	......	650	2 25
39	2 25	107	......	175	......	243	......	311	......	379	......	447	121 50	515	......	583	11 25	651	......
40	......	108	......	176	......	244	......	312	4 50	380	......	448	......	516	6 75	584	......	652	......
41	......	109	......	177	......	245	13 50	313	......	381	2 25	449	......	517	......	585	......	653	2 25
42	......	110	......	178	......	246	......	314	......	382	......	450	......	518	......	586	84 00	654	......
43	......	111	177 75	179	......	247	......	315	......	383	......	451	......	519	154 50	587	......	655	......
44	......	112	......	180	......	248	......	316	......	384	......	452	......	520	......	588	2 25	656	......
45	......	113	177 75	181	......	249	29 00	317	......	385	2 25	453	......	521	2 25	589	......	657	......
46	......	114	......	182	......	250	......	318	......	386	3 00	454	2 25	522	......	590	269 25	658	......
47	7 50	115	......	183	254 25	251	......	319	......	387	......	455	......	523	......	591	......	659	......
48	......	116	120 00	184	......	252	......	320	......	388	......	456	......	524	......	592	......	660	......
49	......	117	......	185	......	253	2 25	321	......	389	......	457	......	525	93 00	593	......	661	......
50	......	118	......	186	......	254	......	322	......	390	......	458	......	526	......	594	......	662	......
51	......	119	......	187	......	255	......	323	......	391	......	459	......	527	......	595	......	663	......
52	307 50	120	......	188	......	256	......	324	105 75	392	......	460	......	528	......	596	......	664	......
53	......	121	......	189	......	257	......	325	......	393	......	461	......	529	......	597	......	665	......
54	......	122	......	190	1 50	258	......	326	......	394	......	462	......	530	......	598	......	666	......
55	......	123	......	191	......	259	80 25	327	......	395	2 25	463	......	531	......	599	75 00	667	......
56	......	124	......	192	......	260	202 50	328	123 75	396	......	464	......	532	......	600	......	668	......
57	......	125	69 00	193	75 75	261	77 25	329	......	397	......	465	......	533	......	601	......	669	......
58	214 50	126	......	194	397 50	262	14 25	330	3 00	398	......	466	4 50	534	......	602	......	670	......
59	2 25	127	......	195	......	263	......	331	75	399	......	467	......	535	......	603	150 00	671	......
60	......	128	......	196	......	264	3 00	332	......	400	237 00	468	......	536	......	604	......	672	......
61	......	129	4 50	197	......	265	......	333	......	401	......	469	......	537	96 00	605	201 75	673	......
62	......	130	......	198	......	266	......	334	15 75	402	......	470	......	538	......	606	......	...	......
63	......	131	......	199	......	267	2 25	335	50 25	403	52 50	471	......	539	......	607	......	...	......
64	......	132	126 75	200	......	268	......	336	......	404	......	472	......	540	206 25	608	112 50	...	......
65	......	133	306 75	201	......	269	......	337	......	405	......	473	......	541	......	609	52 50	...	......
66	......	134	......	202	......	270	......	338	......	406	......	474	......	542	......	610	......	...	......
67	......	135	......	203	252 75	271	......	339	......	407	......	475	......	543	......	611	......	...	......
68	......	136	81 00	204	4 50	272	......	340	......	408	......	476	......	544	......	612	......	...	......

Received during month of June $18,861.50

Disbursed during month of June, account Beneficiary Claims	2....	$3,000	$6,000	$52,000.00
	1....	2,000	2,000	
	25....	1,500	37,500	
	4....	1,000	4,000	
	5....	500	2,500	

Respectfully submitted,

W. S. CARTER,
G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from May 31, 1905, to June 30, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid.
795	Aaron Broom	518	Death	Oct. 13, 1904	Appendicitis	$ 500	June 1, 1905
951	Arlon V. Colcord	287	"	Mar. 21, 1905	Boiler explosion	1,500	" 1, "
986	Homer C. Emig	96	"	Apr. 4, "	Collision	1,500	" 1, "
962	R. B. Henderson	622	Disability	June 3, "	Consumption of lungs	1,500	" 21, "
978	Norman H. Virgie	587	Death	Mar. 15, "	Typhoid fever	500	" 21, "
981	T. J. Carter	372	Disability	June 2, "	Paralysis	1,500	" 21, "
989	George J. White	3	Death	Apr. 9, "	Septic peritonitis	500	" 21, "
990	Edgar R. Colvin	299	"	" 8, "	Cancer	1,000	" 21, "
991	Reuben F. Bowen	432	"	Feb. 28, "	Drowning	500	" 21, "
993	William W. McClure	313	"	Apr. 7, "	Consumption of lungs	1,500	" 21, "
994	John G. F. Korb	334	"	" 15, "	Pulmonary tuberculosis	1,500	" 21, "
995	Harry E. Veigle	392	"	" 13, "	Diabetes	2,000	" 21, "
997	Morris Fritsch	18	"	Mar. 16, "	Derailing of engine	1,500	" 21, "
998	Levi J. Husband	641	Disability	Apr. 16, "	Amputation left hand	1,500	" 21, "
999	William Stoll	176	Death	" 13, "	General paralysis	1,500	" 21, "
1000	James S. Sitman	498	"	" 15, "	Cancer of stomach	1,500	" 21, "
1001	George E. Dickie	341	"	" 5, "	Derailing of engine	1,000	" 21, "
1002	E. W. Holleman	460	"	" 13, "	Acute asthma	1,500	" 21, "
1003	L. H. Pressler	183	"	" 21, "	Fell under moving train	1,500	" 21, "
1004	John A. Mort	368	"	" 7, "	Derailing of engine	500	" 21, "
1005	William W. Wolcott	202	"	" 23, "	Strangulated bowel	1,500	" 21, "
1006	Theodore Smock	207	Disability	" 14, "	Amputation right foot	3,000	" 21, "
1007	James Burns	490	Death	" 27, "	Consumption of lungs	1,500	" 21, "
1008	William B. Brunt	33	"	" 22, "	Derailing of engine	1,000	" 21, "
1009	Fred A. Goldthwaite	378	"	" 12, "	Accidental poisoning	1,500	" 21, "
1010	Frank Heimburger	492	"	" 24, "	Cerebal hemorrhage	1,500	" 21, "
1011	John W. Cox	188	"	" 23, "	Pulmonary tubercolosis	1,500	" 21, "
1013	Benjamin Stinson	521	"	May 1, "	Heart failure	1,000	" 21, "
1017	Ernest W. Brocker	590	"	Apr. 30, "	Derailing of engine	1,500	" 21, "
1019	Jeremiah A. Cronyn	472	"	May 5, "	Blood poisoning	3,000	" 21, "
1020	Michael G. Kelly	434	"	" 5, "	Derailing of engine	1,500	" 21, "
1021	Watkin Jones	149	"	" 6, "	Bright's disease	1,500	" 21, "
1022	Albertus A. Culp	236	"	Apr. 25, "	Derailing of engine	1,500	" 21, "
1023	Carl H. Shapley	27	"	May 9, "	Consumption	1,500	" 21, "
1024	James B. Carman	637	"	" 4, "	Typhoid fever	1,500	" 21, "
975	Martin C. Petersen	34	Disability	June 5, "	Consumption of lungs	1,500	" 21, "
1014	Jennison M. Sheire	320	Death	Apr. 26, "	Pneumonia	1,500	" 21, "

37 death and disability claims, aggregating $52,000.

Pending Claims June 30, 1905.

63 death claims aggregating	**$94,500**
14 disability claims aggregating	**20,500**
Total of 77 claims aggregating	**$115,000**

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Beneficiary Assessment Notice No. 135.

To the Treasurers of Subordinate Lodges: **PEORIA, ILL., August 1, 1905.**

Dear Sirs and Brothers:—You are hereby notified that assessments for death and disability claims are hereby levied as follows: For each beneficiary member whose name appears on the rolls of membership on July 31, 1905 (also for all beneficiary members having taken a withdrawal or transfer card after July 1, and for all members who died or were totally disabled since July 1), carrying a Beneficiary Certificate of THREE THOUSAND ($3,000) DOLLARS, you are required to forward the sum of FOUR DOLLARS AND FIFTY ($4.50) CENTS. For those carrying a Certificate of TWO THOUSAND ($2,000) DOLLARS, you are required to forward the sum of THREE DOLLARS ($3.00). For those carrying a Certificate of FIFTEEN HUNDRED ($1,500) DOLLARS, you are required to forward the sum of TWO DOLLARS AND TWENTY-FIVE ($2.25) CENTS. For those carrying a Certificate of ONE THOUSAND ($1,000) DOLLARS, you are required to forward the sum of ONE DOLLAR AND FIFTY ($1.50) CENTS, and for each member carrying a Certificate of FIVE HUNDRED ($500) DOLLARS, you are required to forward the sum of SEVENTY-FIVE ($0.75) CENTS. Said remittances to reach the Grand Lodge not later than August 20, 1905, as provided in Section 62 of the Constitution.

Yours fraternally,

W. S. CARTER,
G. S. and T.

SPECIAL NOTICE.—All remittances must be made by BANK DRAFT, MONEY ORDER, OR EXPRESS ORDER. Beneficiary members initiated on and after August 1st are not liable for this assessment.

Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending July 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1081	James Pirie	442	Death	June 21, 1905	Bright's disease of kidneys	$1,500
1082	George Tooley	168	Disability	“ 22, “	Part of left hand amputated	1,500
1083	John R. Peteet	449	Death	“ 22, “	Gunshot wound	3,000
1084	Will C. Alvord	431	“	“ 23, “	Derailing of engine	1,500
1085	Henry Munns	5	“	“ 23, “	Typhoid fever	1,500
1086	Charles D. Clark	49	“	“ 23, “	Boiler explosion	1,000
1087	Denis Langan	228	Disability	“ 23, “	Consumption of lungs	1,500
1088	John D. Johnson	409	Death	“ 23, “	Derailing of engine	1,500
1089	John J. St. Leger	214	“	“ 24, “	Collision	1,500
1090	Bernard L. Ballard	132	“	“ 24, “	'Crushed by cars	1,500
1091	George W. Stanley	551	Disability	“ 26 “	Consumption of lungs	1,500
1092	Lynn B. Phipps	409	“	“ 26, “	Amputation of right foot	1,000
1093	Cleveland Carter	590	Death	“ 27, “	Collision	1,500
1094	Bernard Carroll	519	“	“ 28, “	Derailing of engine	1,500
1095	D. J. Barber	238	“	“ 28, “	Tuberculosis of lungs	1,500
1096	Clay Hitler	97	Disability	“ 30, “	Amputation left foot	1,500
1097	Geo. W. Burbridge	54	“	“ 30, “	Amputation left hand	3,000
1098	John Parsons	175	Death	July 1, “	Apoplexy	1,500
1099	William Crossman	271	“	“ 1, “	Suicide	1,500
1100	Anthony Daily	120	“	“ 1, “	Cerebral hemorrhage	1,500
1101	Corley Gross	146	“	“ 3, “	Derailing of engine	1,500
1102	Roy E. Tibbits	489	Disability	“ 3, “	Paralysis	2,000
1103	George Grant	559	Death	“ 3, “	Derailing of engine	1,000
1104	Theodore F. Armbrust	601	“	“ 5, “	Typhoid fever	1,500
1105	E. T. Dowden	474	Disability	“ 8, “	Paralysis	1,500
1106	James M. Rippetoe	164	“	“ 8, “	Amputation of left foot	3,000
1107	John J. Simmons	446	“	“ 10, “	Consumption of lungs	1,500
1108	Edward Miller	276	Death	“ 11, “		1,500
1109	John J. Reilly	226	“	“ 11, “	Acute mania	1,500
1110	Clarence R. Welcher	240	“	“ 11, “	Typhoid fever	1,500
1111	Ed Walker	262	Disability	“ 11, “	Blindness	1,500
1112	George F. Koch	103	Death	“ 11, “	Head crushed by elevator	1,500
1113	Robert Brutcher	323	Disability	“ 11, “	Aneurism	1,500
1114	Harry Lindenmuth	251	“	“ 11, “	Amputation left foot	1,500
1115	Frank Seibel	570	Death	“ 11, “	Run over by engine	1,000
1116	Frank McAdams	244	“	“ 12, “	Collision	1,500
1117	Harry M. Disher	75	“	“ 12, “	Typhoid fever	1,500
1118	Willis W. Fisher	23	“	“ 14, “	Derailing of engine	1,500
1119	John Hensarling	590	“	“ 14, “	Derailing of engine	1,000
1120	Harvey F. Yeager	220	Disability	“ 14, “	Paralysis	1,500
1121	John W. Rodgers	336	Death	“ 15, “	Crushed between cars	1,500
1122	William Fogarty	378	“	“ 15, “	Derailing of engine	1,500
1123	Frederick C. Gregg	608	“	“ 15, “	Collision	1,000
1124	A. J. Lloyd	378	“	“ 15, “	Derailing of engine	1,500

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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MULTNOMAH FALLS

LADIES SOCIETY of the B. L. F.

Agnes G. Strong—Editress.

FRIENDSHIP — AND — CHARITY

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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From the Grand President.

Organization of Lodges.

The Sixth Biennial Meeting of the Grand Lodge, held at Chattanooga, Tenn., September, 1904, directed that in the organization of lodges the President of the lodge nearest thereto be authorized by the Grand President to proceed to the place designated by her, for the purpose of organizing a lodge, the organization of which had been approved, as required by law. In other words, the Grand President is required by law to arrange with the President of the lodge located nearest to the place where the new lodge is to be organized for the organization of such lodge.

In the June issue of the Magazine a sister writing from Toronto Junction desires to know why the lodge at Calgary, Canada, which is 2,243 miles from Montreal, Canada, has not been organized. The nearest Canadian lodge is at Schrieber, a distance of 1,198 miles. The Vice Grand President lives at Stratford, Ontario, which is approximately the same distance from Calgary as is Montreal, namely, 2,243 miles. Spokane, Wash., is approximately 500 miles from Calgary. Calgary, it should be remembered, is located at the extreme end of the Canadian Pacific Railway. The railway fare from Montreal, or Stratford, is about $95. The sleeper fare is $12 each way, making $24 for the round trip. It will take practically four days, or more, to reach Calgary. To the above amount must be added the three meals on the train for eight days, or thereabouts. In addition thereto is the salary of the officer. Before the lodge could be organized it will be necessary for the petitioners to file their application for charter with the Grand President for approval, after which the Acting Secretary will be required to forward the applications for membership to the Grand Secretary and Treasurer for approval by the Grand Medical Examiner, as provided by law.

Some time since the desire of the ladies of Calgary to organize a lodge was brought to my attention. The matter was referred to the Vice Grand President, with a request that she inform me if she believed that I, as Grand President, would be justified in directing her to incur the expense incident to a trip to Calgary for the purpose of organizing this lodge. The question is still unanswered. No doubt the Vice Grand President, like myself, realized that, unless it was impossible to make arrangements with an officer of a nearby lodge, such expense should not be incurred. Furthermore, one naturally hesitates to ask any sister to absent herself from her home duties for so long a time.

For the benefit of the sister seeking this information, she is informed that the Grand President is exceedingly anxious to spread the influence of the Society and have as many lodges organized as is compatible with its best interest and in line with good administration, but it is believed that before she should authorize the expenditure of about $150, even though it might be spent in a good cause, she should make an effort to make the best possible arrangement, in a financial way, for the Society.

While it is true that the Society has a very creditable amount in its general fund, it is equally true that unless care is exercised in the way of expenditures this fund will quickly disappear. No doubt the time will soon come when the Ladies Society will be able to have in the field one or more organizers or instructors, who can visit the various lodges, as well as those places where there are no lodges, in the interest of the Society. This, it is true, will mean the expenditure of considerable money in the way of railway and sleeping car fare, but we will hope that the Society will so increase in membership that the expense per member foi such service will be very small. In the meantime, it will be the duty of the Grand President to do those things which are in line with good administration—in other words, to administer the affairs of the Society in a businesslike way.

The explanation made in regard to the organization of the lodge at Calgary is for the purpose of giving facts and preventing the membership at large from forming an erroneous impression.

G. M. SARGENT, G. P.

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Who Leads?

Below is given the membership of the ten largest lodges in the Ladies Society, as reported July 1, 1905.

The names of the ten leaders will be published each month until further notice:

1. No. 142, Empire, Buffalo, N. Y., 124.
2. No. 70, Holly, Buffalo, N. Y., 105.
3. No. 3, Hazel, Peoria, Ill., 86.
4. No. 60, Pride of 174, Harrisburg, Pa., 82.
5. No. 146, Virginia, Chicago, Ill., 77.
6. No. 58, Sisters of 99, Rochester, N. Y., 76.
7. No. 125, Charity, Jackson, Mich., 71.
8. No. 10, Helpmate, Elkhart, Ind., 71.
9. No. 113, Ft. Orange, Albany, N. Y., 66.
10. No. 51, Grayson, Denison, Tex., 60.

Notes.

A new lodge is reported organized at Winslow, Ariz., by Mrs. Lucinda Stevenson, June 13th. Welcome.

How long is it since you secured an application for membership in your lodge, sister? Did it ever occur to you that a continuous effort for the good of the Order on your part would do wonders in building up your own Society and the Order generally?

If all our members were "in the Order merely for the protection;" if they never attended meetings; if they refused to hold office; if they never asked any one to join; if they never said a good word for the Society, just paid their dues and assessments and "kept in for the insurance," how much would their protection be worth to their beneficiaries?

There is not much honor in simply having your name on the roster and paying your dues as they become due. It will never build a monument in character for good, or mark the ideal of a fraternal member in full fellowship in the Order. Much more is naturally expected to attain the high aim of the Order of the L. S. of the B. of L. F.

Don't leave the matter of taking care of your lodge to the part of a few members. Take an interest in it yourselves.

"Always keep remembering,
When cares your path enshroud,
That God has lots of sunshine
To spill behind the cloud."

What have we done to advance the noble work of our Order? Have we lived our obligations? Have we worked for the upbuilding of the principles of our Order? Will our work bear the scrutiny of the Master's all-seeing eye? Have the lessons to which you have so often listened borne fruit in good works? If so, we have helped to unfurl the banner of the Ladies Society of the B. of L. F.

"Guard well they lips, none, none can know
What evil from the tongue can flow;
What guilt, what grief may be incurred
By one uncautious, hasty word."

It is very easy to quote the Golden Rule, "Do unto others as you would have them do unto you," but do we do it? We are too apt to see the faults in others, but not in ourselves. Let us remember that we are all sisters and brothers in this great service of humanity, and, whatever our faults, strive to have that kindly feeling, one towards another, and in the end the result will bring credit to ourselves and good to our Order.

Whatever is right, defend; whatever is wrong, condemn.

Be true to your vows.

Speak kindly of your sisters. One harsh and imprudent word may blast their happiness or kindle a fire that will send your Society usefulness up in smoke.

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A Woman In It.

"They talk about a woman's sphere
As though it had a limit;
There's not a place in earth or heaven,
There's not a task to mankind given,
There's not a blessing or a woe,
There's not a whisper, yes or no,
There's not a life, or death, or birth,
That has a feather's weight of worth
Without a woman in it."

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Reflections.

Confidence is a plant of slow growth.

Energy will do anything in this world.

Sorrow's best antidote is employment.

Right living will produce right thinking.

Hate no one; hate their vices, not themselves.

He who tries to injure another injures himself more.

One enemy is too many; fifty friends are not enough.

Envy has no other quality than to detract from virtue.

Heaven will permit no man to secure happiness by crime.

A man is miserable only in so far as he thinks himself so.

Common sense is the knack of seeing things as they are.

What too many orators want in depth, they give in length.

The nearest approach to heaven is found in a true home.

Cultivation is as necessary to the mind as food is to the body. —Selected.

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New Lodges.

Since the close of the last session of the Grand Lodge the following new lodges have been organized:

1904.

September 15, Calumet, Douglas, Ariz.

September 17, Pala Dora, Amarillo, Tex.

October 4, No. 152, Perseverance, Jamestown, N. D.

October 17, No. 187, Pride of 252, Columbia, Pa.

December 16, No. 191, Catherine Hannahan, New Haven, Conn.

December 28, No. 193, Chi-gan-cy, Michigan City, Ind.

November 9, No. 157, Pride of the Penobscot, Bangor, Me.

1905.

January 18, No. 189, Lincoln City, Lincoln, Neb.

January 23, No. 188, Juniper, Alexandria, La.

February 20, No. 139, La Belle, Pocatello, Ida.

March 21, No. 194, Pride of Sherman, Lancaster, O.

March 26, No. 198, Green Mountain Sisters, Rutland, Vt.

April 12, No. 195, Spokane, Spokane, Wash.

April 18, No. 197, Golden Gates Companion, San Francisco, Cal.

April 21, No. 199, Puget Sound Sisters, Seattle, Wash.

May 5, No. 192, Thumb Butte, Prescott, Ariz.

May 27, No. 122, Pilot, Breckenridge, Minn.

June 6, No. 119, Bon Ami, Houston, Tex.

June 13, No. 156, Oasis, Winslow, Ariz.

These lodges are among our brightest and best, and their work would put to shame many of our older lodges, some of whom, self-satisfied and contented in thinking they are excelled by none other, would be surprised could they witness the work done by some of their younger sisters. We extend our best wishes for prosperity to these new sister lodges, and trust they will exemplify in their daily lives the beautiful lessons taught in our initiatory work.

And may they be an honor and a credit to the brothers who have made it possible for us to belong to so grand an organization. Let us be careful that we never by word or deed cause them to regret it.

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Another New Sister.

On June 13th I organized Oasis Lodge, No. 156, at Winslow, Ariz., with seven charter members, and left them with six applications for membership, whose medical blanks had not been returned. On June 14th the new lodge met in regular session, with the new officers in their respective places, and went through the order of business, to learn the way. On June 15th Oasis Lodge tendered a reception in honor of the organizer, to which were invited all members and their families, and the brothers of Pacific Lodge, No. 173, and their families. A good attendance and a very enjoyable time was had, with plenty of good things to eat, and the new sisters did everything possible for the enjoyment of their guests.

The ladies gave a "sham" initiation, having for their subject one of the brothers. The work put on for this occasion was unique throughout, and afforded innocent mirth for the happy company. This new sister lodge starts out under very favorable auspices, all members being enthusiastic and willing workers, and I believe they are certain of success.

LUCINDA B. STEVENSON, Organizer.
Needles, Cal.

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Spokane Lodge No. 195, Spokane, Wash.

On April 12, 1905, Spokane Lodge, No. 195, was duly organized in Pacific Hall, Spokane, Wash., Sister Dawley, of Hillyard, being the organizer. The society starts out under very encouraging auspices, having organized with nine names on the charter, and have since taken four candidates through the mysteries of our Order. Much credit is due to the brothers of Sprague Lodge for their assistance in the organization of our new Society.

On May 24th we gave our first entertainment, a card party, and again the brothers made us their debtors by donating us the use of their lodge-rooms on their meeting night. Ice cream and cake were served, and the entertainment netted us a neat sum of money for our treasury. We feel encouraged to go forward and make another attempt in the near future.

We are very young as a Society, but we feel that we are quite old enough to be heard from through the columns of the Magazine, and we trust the brothers and sisters will wish us good luck, as we journey into the future.

A MEMBER OF SPOKANE LODGE.
Spokane, Wash.

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Success to Heartsease 33.

It has been my privilege to visit Paducah, Ky., for the purpose of organizing a lodge of the L. S. to the B. of L. F. The brothers of Nos. 165 and 238 were untiring in their efforts to aid the ladies in organizing, and much credit is due them.

Heartsease No. 33 was organized on July 2, 1905, with seven charter members, and will meet alternate Thursdays of each month.

We met on July 1st, and as quite a number of ladies were detained at home on account of illness, it was decided to wait until Sunday afternoon, July 2d, to organize the new lodge. We adjourned to the home of Brother and Sister Roeder, where we were pleasantly entertained by Mr. and Mrs. Roeder, Spinner, Thomas, Hubbard, Martin, McGuire, and Miss Oma Roundk, of Michigan. The nature of the entertainment was purely social, and a short musical program was rendered. Bro. Roeder's songs will long be remembered, and the sweet music of Sister Roeder. Sister Roeder was ably assisted by Mrs. Joe McCann, whose sweet voice lent much to the evening's entertainment.

Refreshments were served and all went home at a late hour, through a drenching rain, which did not dampen the ardor of our spirits, as we met promptly on Sunday afternoon, and Heartsease, No. 33, was duly organized.

On Monday evening a meeting was called and one candidate was initiated into the mysteries of our Order, after which we were again invited to the home of Brother and Sister Roeder, where the brothers had gathered earlier in the evening, and a general good time was enjoyed by all.

Heartsease Lodge, No. 33, is a lodge the Ladies Society may well be proud of. They take the work up readily, and I feel sure we will have in them a band of willing workers.

The courtesies shown the organizer by the brothers and sisters will ever be a pleasant memory. The little canary bird presented by one of the sisters has been singing the praises of the L. S. every day since my return home. ROSE SLABY.

Louisville, Ky.

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Election.

Another year spreads its vista before us, and I hope as the new officers assume their obligations for the coming year that they will realize their great responsibility. It is to be hoped that you have made a wise selection. If not, they have been elected by the majority vote of your Society. And it is each member's duty to help them in every way possible, even if it should not be your choice. They have an obligation to live up to and we must be united if we would prosper. The duty of each officer is plainly laid down, so that even he who runs may read. To each officer is assigned special work, and if only each did this work as prescribed all would move smoothly, and the work would reach a degree of perfection that can only be reached by a conscientious discharge of duty, and consideration of the rights each of the other.

Memorize the ritualistic work, and take pride in doing it well, and your interest in the Order will grow as you familiarize yourself with the work.

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From a Friend.

In the July issue of the Magazine a writer from Toronto Junction, Can., asks for enlightenment as to why arrangements have not been completed for the organization of the lodge at Calgary, and calls attention to the benefit to be derived from having the presence of a Grand Officer at social functions, etc.

A review of the proceedings of the Seventh Biennial Meeting of the Grand Lodge discloses that the two predominating thoughts of the delegates were to reduce the grand dues, and thereby reduce the revenues of the general fund, and to increase the amount of insurance without a corresponding increase of cost to the membership, thereby increasing the liabilities of the Insurance Department without a corresponding increase in its assets. It is unfortunate that the members of the Society fail at times to take out their pad and pencil and do a little figuring. The only time some of us will do this is when our individual pocketbooks are involved. It is said, "What is everybody's is nobody's business." Is this not true with the funds of the Society?

Let us briefly consider what it will mean, financially, to the Society, to maintain in the field an officer who will devote all of her time, or the greater part of it, to the work of the Society. First, it will be necessary to get an officer who can cut away from home ties and household duties. After she has been secured, the matter of her salary and expenses must then be considered. Transportation, which will have to include sleeping-car fare when necessary, and meals, as well as hotel expenses, is an item which, it is feared, will quickly eat up the few thousand dollars which may be in the general fund. The expenses of an officer traveling about the country, visiting lodges or arranging for their organization, could only be charged to the general fund. The insurance fund is separate and distinct, and it can not be used for other purposes than those for which it was created and is maintained. A very low estimate would place the expenses of such an officer at $150 per month, or $1,800 per year. Paying her a salary at the rate of $2 per day, it will be readily seen that $90 would not go very far in the way of railway fare and maintenance. No doubt all lodges are desirous of having an officer of the Grand Lodge visit them, as it is believed such visits would tend to revive interest in some and in others would spur the members on to greater effort, but is the Society in a financial position today to assume this additional expense? If such officer was directed to devote all of her time to the work of the Society, and later on it became necessary to levy a special assessment for her maintenance, would the members willingly and cheerfully pay such assessment? It may be possible that the policy of the Society has been a trifle too conservative, that it has been overcareful in its appropriations, but surely no one can truthfully say that it has not prospered. Its growth may have been slow, but it has been a healthy growth. If the sisters will devote some of their energy to spreading the influence of the Society and increasing its membership, perhaps the time is not far distant when it can have an officer in the field at all times, and it will not be necessary for it to compute the cost of organizing a lodge in a remote part of the country.

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Joint Installation.

Elm City Lodge 284 held a very largely attended meeting in Odd Fellows Hall, Sunday, the 9th of July, the occasion being the joint installation of the newly-elected officers of the Firemen's Lodge and the Ladies Society.

The members of the Ladies Society made a very pretty showing as they marched into the hall. The brothers were all standing, while Bro. Kelley introduced the sisters and extended to them the use of the various chairs, and complimented them very highly upon their attractive appearance and their loyalty to their lodge. Mrs. Jane Deskin, the most efficient Secretary, was called to the chair by the President, Mrs. Mary Miller, and requested to perform the installation ceremonies, which she in a most worthy, businesslike manner, proceeded to do, Miss Abbie Limerick acting as Marshal in a very graceful and pleasing manner. The following officers were duly installed: President, Mrs. Henry Sheppard; Vice-President, Mrs. C. Beerey; Secretary, Catherine Furgurson; Collector, Bessie Talley; Treasurer, Ella Pyle. At the close of the ceremonies the sisters were given a very liberal and enthusiastic hand-clapping, and they in turn outwitted the brothers to the banquet hall, where they had prepared another big surprise in six well-laden tables, with that which always makes the "fire-boys" feel in their very happiest moods.

After doing justice to the good things to eat, Bro. Kelley acted as toastmaster, and paid an elegant tribute to the L. S. Mrs. Miller, the retiring President, in a very pretty speech, thanked the officers for their kindly support, and said "that although she had been called Past President, she trusted that the sisters would not infer that it meant a past sister; that she wished them to feel that she would in every way continue to work for the upbuilding of the L. S., just the same as if the responsibility of the office of President was on her shoulders." She was loudly applauded. Mrs. Sheppard, the new President, said "she would try and do her part, notwithstanding her husband's prediction that the Society would collapse in less than six months, and now that she had taken the reins of government she would go under sure." Mrs. Sheppard fairly brought down the house with her cleverness.

Miss Abbie Limerick was called upon next, and said that "she would try and prove her loyalty to the lodge by deeds, rather than words."

Mrs. Bessie Talley, in a very efficient manner, made a few very noteworthy remarks.

Bro. Kelley complimented the speakers for their kind and encouraging words, and called lastly for one of the most loyal brothers in the Brotherhood, Bro. John Fanell, of 284, and connected with the Scranton School of Correspondence, of Scranton, Pa. He said "that those who knew him best would testify to his modesty, and that in part would be an excuse for a very little speech from him, but he could not resume his seat without complimenting the ladies for the grand showing they have made this afternoon. The successful manner in which they had conducted their lodge business is certain of success."

A number of the boys responded to toasts, all wishing all kinds of success to the new officers.

The occasion was certainly a very enjoyable affair, and reflects much credit upon the ladies who managed it.

Wm. A. Pyle, Lodge 284.
New Haven, Conn.

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Power of Cheerfulness.

Enlightenment cures every dark view. It is the height of ignorance to bemoan. What if at times the plan of the universe does look black? Wait awhile until you know your soul better, and the plan will look perfect. It is worse than folly to berate yourself and to get discouraged. There are a thousand cures for the "dumps." Have you not noticed that, although your mind gets down into the cellar, a little later some little thing will occur, and it will bounce up to the housetop? You will be surprised at how much better you will be feeling. When you are feeling your worst, either physically, mentally or spiritually remember it will pass. Your life will take a turn and brighten up. You say you don't see how it can. Never mind; that's God's business.

If all people who commit suicide would wait till the clouds rolled by, they would live to laugh at the passing discouraging mood which prompted the act.

So the next time you think you are a failure, brace up, give yourself a shower bath of common sense, and realize it isn't your liver that is out of order; it is plain ignorance that led you to think despair. The "plan" is all right; you don't see far enough. Robert Louis Stevenson said, "Our business in this world is not to succeed, but to continue to fail in good spirits."

That is the point exactly. Cultivate cheerfulness; it is a power for health, a blessing to all the world. We are here to learn, to dawdle; getting its results; to live for only our own pleasure, until we clasp emptiness to our cheated breasts. We are to come up to tight places and problems and to solve them; we are not to get low-spirited and despondent and think our lot a hard one. Sooner or later all pass through the same experience, both bitter and sweet ones. God has no favorites in this great schoolroom, nor on His playground.

You are not the only imperfect beings on earth—all had to be dunces before they were sages. Yes, you may have wasted your time, too. Don't get rattled, it is superb to keep your grip. We have made mistakes, but what of it? They put us in possession largely of what sense we have now.

Don't get morbid about yourself, just mind your own business, get to living more for others. Don't think so much about yourself; determine to keep cheerful whatever comes to pass. All that occurs must occur, and our efforts in the right direction always bring us out on top. Keep large, and sweet, and generous, and you will have to build a new heart for overflowing blessings.

Surely it is a privilege to learn. Who would admit that he did not want to learn? Then why call ourselves names that we are dead failures, and that we don't amount to much? Nonsense! Eternity is before us; just let us begin to amount to something. Always there is a new page to turn over in life's book—there is another chance for everyone.

As you have done the best you could these last years, don't lament or review with chagrin, one thing you have done or undone. It has taken all your past to make you what you are now, so don't underrate it. Make each day as happy for some one as you can; live with confidence and patience. Have more stability than a jelly fish. Be faithful. The moment you have learned the lesson from what at present composes your life, release from the lesson will come, and you will pass on to a higher lesson. Stopping still, and having to wait so long before you can go higher in the scale of life, is what is so stupid. The hand of death awaits to teach you, if repeated whacks will not. Just do as you please. Freedom in the hands of the ignorant is like a sharp knife in the hands of a baby.

The first thing the unwise one does with freedom is to abuse it. Babies cry for knives, and then bawl a lot, and damage themselves a lot when they get them. The enlightened alone have freedom which is the understanding we call self-control. Assure yourself that the shame and difficulty you have is the same with all persons at one stage of the game; although you see in this incarnation, so little of what has gone before, and what must follow in their lives; you may think your fate harder than theirs, but this is not so at all.

All must climb the ladder of knowledge; some go to sleep on the way up, some stop to cry, others take two steps at a time and sing all the way up. Which are you?

I am your friend, remember; my affections are at the top and my loving sympathy is at the bottom. Come on! Since we have within us God-powers, marvelous and limitless, awaiting our recognition, and since we can slowly and surely learn, why should we get discouraged? It is silly to deplore how little we are without millions or fame.

Self-chastisement is a waste of time; it is babyish and egotistical. You have made yourself what you are; be silent. You can improve yourself in the next twenty-five years. Be silent. Let love work miracles. Don't scratch people's ears by weeping over spilt milk. Next time you won't stumble, that is the beauty of the splash.

Complaint is ridiculous; it does absolutely no good and it delays. Children show each other their sore thumbs. Grown up people show each other their sore minds. Scars should be ignored; talking about our failures is a form of conceit. Commence now to be cheerful and quit tearing yourself to pieces. Push ahead. Remember everything is for your ultimate good. Get wisdom, and your uneasiness will cease. Refuse to learn and your misery will increase.

Some are born to understand, some achieve it, some have it thrust upon them. Avoid morbid, cynical and self-abusive people. You go south for your consumption, go to cheerful people for your mind's good. We absorb from others their thoughts and dispositions; choose companions who take the bright view of things, then you will receive helpfulness. Keep out of the dark wave and gloominess of the night and be cheerful and prosperous. Read good and wholesome literature. Many bring disappointment upon themselves by reading vulgar books and associating with impure characters. Bumming around in the musty lowlands of self-depreciation will only fill your eyes with dust and tears.

I beseech you to say, "I can and will be cheerful." Cheerfulness puts you on a steed that never tires. Never get discouraged about yourself, or anybody else. No one ever "goes to the dogs;" it is an ignorant speech. Never put a hopeless thought in the atmosphere around you. Give approbation whenever you can. Those who never give one word of praise, are selfish, thoughtless and lazy. Never censure! For goodness sake don't. Sufficient censure comes from within. Be as the bush that passes through the storm blossomless. Remember out from the dark earth comes the rose. Out of each sorrow comes a glad tomorrow. Try to always be cheerful and wait for the effect. Thought.

STAR MESSENGER.

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Oil Yourself a Little.

An old Quaker was once visited by a garrulous neighbor who complained that he had the worst servants in the world, and that everybody seemed to conspire to make him miserable.

"My dear friend," said the Quaker, "let me advise you to oil yourself a little."

"What do you mean?" said the irritated old gentleman. "Well," said the Quaker, "I had a door in my house some time ago that was always creaking on its hinges, and found that everybody avoided it; and although it was the nearest way to most of the rooms, yet they went around some other way. So I just got some oil and after a few applications it opened and shut without a creak or a jar, and now everybody just goes to that door and uses the old passage. Just oil yourself with the oil of kindness. Occasionally praise your servants for something they do well. Encourage your children more than you scold them and you will be surprised to find that a little sunshine will wear out a lot of fog, and a little molasses is better than a great deal of vinegar. Be courteous."—Exchange.

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Endeavor.

I.

An act of kindness when the day
Is young and fair;
A cheering word to charm away
Some wan one's care,
And, though all else be done in vain,
That day has still brought precious gain.

II.

A high resolve, a kindly thought,
When morning's glow
Is on the earth and night is not—
Good will—and, though
The tasks may press, the fetters gall,
That day brings triumph, after all.

S. E. Kiser in Exchange.

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Meeting of Model Fraternity Hive.

Our record keeper has called my attention to the fact that the clock has reached the opening hour, and let me just say that it does your commander good to be able to open the meeting on time with a full quota of officers and a good attendance. Someone said to me the other day that she knew nothing so dampening to the spirit of enthusiasm as a long wait before hive begins, and nothing the average woman dreads more than a late closing. So in our hive we begin promptly and as our members get here in plenty of time, none of us miss the opening.

Will someone please distract our little sergeant's attention for a minute, because I want to ask you if you know what makes her so popular. Well, I found out the other day. It is because she is always ready with help and cheer. She came to me last month after review and said: "Do you know, I think our hive is going to be the finest thing, and I am going to help you make it the success it ought to be. Everybody is saying how pleasant this first meeting has been, and if they are not all here with their friends, too, next month, I'll be surprised." And you see, she wasn't surprised, for here we are.

By the way, that little matter of a helpful word to others is so easy to forget that some of us, I believe, never do remember it, and go through life without once telling our friends and neighbors how we really appreciate all they are and do. It isn't much trouble when you see someone trying hard, sometimes against odds, too, to entertain or amuse people and make things go smoothly, to let your influence go with hers and give a push in the right direction. And it is easy when it is over, to say to those who have given their efforts that the afternoon has been a pleasant one and you are sure everyone enjoyed it. Just remember how much good it does you when in like position. If you hear something pleasant about anyone, don't keep it to yourself. The approval of friends is dear to us all. Happiness is built of just such things. If you can make anyone happier with a word of merited praise count yourself a miser to withhold it.

A smiling face, a faculty for saying pleasant things, these are what people like to have about, and the good they do in the world far overbalances the effort of remembering.

With the desire to have others happy as a basis, we shall not stray far from the path of courtesy and politeness in our hive reviews, for the old maxim is familiar to everyone and the "kindest thing in the kindest way" will always be the right thing too.

Speaking again of attendance, there isn't only the duty of coming ourselves to the reviews—it is our *best selves* who should come. Did you ever see the woman who makes a great virtue out of having visited a sick neighbor, and afterwards find out that she had gone with her own troubles uppermost in her mind and for perhaps an hour had sat by the invalid's bedside reciting her woes or commiserating the other's ailments, leaving behind an atmosphere of gloom anything but exhilarating? What a difference from a call from the happy soul who has noticed something pretty or amusing on the way over or just runs in for a minute to tell the sick one some news of the neighborhood that she is anxious to hear.

Then there is the one who comes to the sewing society, the social gathering, or the hive review as a duty which must be performed and is fully liquidated by her mere presence at the place of meeting. No smile crosses her features, no effort is made to be sociable, to welcome a stranger, or to ease a situation which may threaten to become strained. No, she stalks through the routine with uncompromising disregard for the feelings of others, recognizing no claim on her sympathy or affection, and with her departure there is an immediate lessening of restraint, and a sigh of unconscious relief is heard from those who remain.

Sometimes under the influence of a happy, cordial atmosphere such a nature as this thaws and gradually unfolds to the broadening spirit of love and cheer. Then what a transformation. A cheery face and a pleasant greeting when she first appears, the quiet talk with the shy member bringing her within the circle of friendliness, a word in season here and there, if oil is needed on troubled waters, and a tactful avoidance of unpleasant subjects, all contribute to her popularity and the happiness of the rest. It is really the same woman, we know, but this time it is her best self whom she has brought to review and her society is now as eagerly looked for as before it was instinctively dreaded.

That is one thing any of us can do, even when it is an effort, to keep our best selves constantly to the front and one very agreeable result is that if we do it determinedly enough and long enough, in the end our best selves will be our true and only selves.—The Ladies' Review.

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Third Annual Ball.

White Carnation Lodge, No. 65, Ladies Society, B. of L. F., gave their third annual ball in the Eagles' Hall one night recently.

The ball was like unto the dances given by this popular organization upon previous occasions—only it was more elaborate and enjoyable.

The Committee on Arrangements had provided ror the comforts of the guests. The floor had been waxed until the surface reflected the graceful forms of the dancers. The music furnished was by the Asylum Orchestra, and was superb. The hall, though crowded by an assembly estimated at 500, was pleasantly ventilated. The room, decorated in honor of George Washington, and also in the colors of the White Carnation Lodge, was pretty in its entirety.

The fact that the floor was always filled with dancers and each number upon the program, of which there were thirty, besides many extras, was danced through by the guests, goes to prove that the floor committee was watchful and entertaining towards all.

The grand march was heralded promptly at 8.30, led by Mr. Fred Putnam and wife, and was entered into by some ninety couples. The waltz, the two-step, the schottische, quadrille, Oxford minuet, polka, seaside and Tucker were danced gracefully, and as the music changed time from one of Terpsichore's muses to another of her fancy, the pretty ladies and gallant gentlemen tripped lightly the joyous tread and pleasure reigned supreme.

The hours passed quickly and the breaking of the dawn found the merrymakers loath to bid their fair hostesses adieu.

The ball was a success in everv respect, and all present will testify that the ladies of the B. of L. F. are royal entertainers.

A MEMBER.

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Letters from Friends.

FROM L. S. 78—(*A Member, Raton, New Mexico.*) Thinking perhaps the readers of the Magazine would once more like to hear from New Endeavor L. S. 78, Raton, N. M., I thought best to let you know that we are very much alive, although our membership is small in number. But we are increasing in numbers. We had two applications at our last regular meeting and we have more in view. The best feeling of fellowship exists between the sisters, and all seem to be of one mind, having the good of the order at heart, and seeking in every way possible to promote the comfort of the brothers. It is indeed interesting to read of the good work, and prosperity of sister lodges. And we are all laboring for the same results if we are living up to the Constitution and By-Laws of our Society. We are endeavoring to benefit and encourage the B. of L. F. and promote a feeling of "Friendship and Charity," also a loyal good will among members of both Orders. Everything that we do seems to bring us some good, and I am sure, that as long as the present feeling of conscientiousness, fidelity and love exists, every undertaking must be a complete success.

We've had quite a number of socials which were successes. June the 24th we gave a "Sock Social," which was unusually well attended, considering the work on the railroad. All enjoyed themselves until a late hour when the large crowd departed well satisfied, and expressed themselves as having a delightful time.

We extend thanks to our brothers of 295 for their kind assistance in making our social events an enjoyable affair.

Some time ago we were very agreeably surprised by several of the sisters of Trinidad, Colorado. Their visit was very much appreciated and we hope they will come again and we assure them a warm welcome. We would appreciate a visit from one of our Grand Officers. We know that it would help us in our work. Kind wishes for all the sister lodges and for all those in whose interest we labor.

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FROM L. S. 143—(*Mrs. Una E. Smith, Sioux City, Iowa.*) At our last regular meeting, June 21st, we elected our new corps of officers for the ensuing year, with Mrs. Mary Watier for President. Our retiring President, Sister Susie Tythcott, who has been our presiding officer since the organization of Supreme Lodge, five years ago, was surprised by an elaborate banquet tendered in her honor. And as a token of our love and esteem she was presented with a beautiful hand painted chopplate. She has been a most worthy President, always wise in her decisions and ever having the good and welfare of the Order at heart; always kind and thoughtful towards all members. Being accustomed to this kind of discipline, we feel sure everyone will be as true and kind to our new President and will labor as loyally and as faithfully for her as they did for the former.

We have accepted an invitation from the brothers to hold a "joint installation" service at which we anticipate a very pleasant time.

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FROM L. S. 95—(*Mrs. Celia Baker, Secretary of Liberty Lodge, McDonoghville, La.*) Today being the 5th of July and our regular meeting day we had our annual installation of officers for the ensuing year. Our new officers are: President, Veronica Kass; Vice President, Sybilla Burmaster; Past President, Emma Myers; Secretary, Celia Baker; Collector, Maggie Arnold; Treasurer, Marie Burlet; Chaplain, Louise Burlet; Warden, Thresa Strauss; Conductor, Mary Kass; Guards, Annie Engler and Caroline Feist; Delegates, Emma Meyers and Annie Engler; Board of Trustees, Mesdames Kass, Celia Baker and Strauss.

After our installation the members repaired to the dining-hall where refreshments were served in abundance. The evening was very wet and stormy, but all present had a very enjoyable time. I hope our newly elected officers will be as attentive as our present ones. I will close, hoping that Liberty Lodge will flourish and its members have many more such pleasant events together. Yours in Friendship and Charity.

* * *

FROM L. S. 127—(*Secretary, Fort Scott, Kansas.*) It has been several months since an article from George H. Nettelton Lodge No. 127 has appeared in the columns of the Magazine, but I can assure you we have not been idle the past year, if we have been silent.

Last February we gave a bazaar which was quite a success. We had boothe arranged to represent the six working days in a week, and in each one we had articles for sale appropriate for the day represented, such as Monday, being washday, we had washing machines, clothes pins, aprons, etc., and thus we went through the whole week. On Saturday it was baking day, and in the booths we had box lunches for sale. These were sold at auction and afforded much amusement. We realized a neat little sum and then we disposed of our quilts the same evening, and altogether we cleared a good round sum of money.

The 14th of April, the brothers of 153 and the sisters of 127 jointly invited Brother Chas. W. Maier to come and lecture to us and exhibit his moving pictures. Brother Maier gave a splendid entertainment, consisting of a lecture, illustrated songs and stereopticon views, which could not be otherwise than a success, when given by one who is so thoroughly interested in our organization and the B. of L. F. Don't tell them it was the greatest "snap" we have ever had. The boys did all the work; we went to the called meeting and sat around and looked wise, and when the entertainment was over they divided the proceeds equally with our Society. Now what do you think of that for helpers?

Our joint meetings are held once every month. They are very interesting, and, of course, well attended, and greatly enjoyed by all.

We were especially favored by having the Kansas State Union Meeting held in our city the 24th, 25th and 26th of May. We can see results already, and know it has done us a great deal of good. When our State Secretary wrote us asking us to have the meeting, she caught us "napping." But we went to work with a right good will and it was not long until we had near $150 in our treasury as a result of our labors.

We were a little disappointed as to the number that attended our meeting, but we certainly did enjoy the company of those who came, and we hope to meet all of them and many more at Kansas City next year.

I am not going to sign my name to this write-up because, I am sure, when the members of 127 read it in the Magazine next month they will say "Is that the best she could do?" My husband has just been "called" for an extra to the mines P. D. Q. Of course you sisters know what that means—fix up a lunch, help him get his overclothes and tools in his grip and get the children all together to kiss him goodby, all in about three minutes. But, really, I believe that I can do that with better success than I have written this article for the Magazine.

* * *

FROM L. S. 107—(*Collector, Beaumont, Texas.*) I read every issue of the Magazine and have seen nothing from Oil Queen Lodge 107 or 590 B. of L. F. for some time. Wake up, boys, and show the brothers and sisters that you are still in existence. On the night of April 24th L. S. 107 gave their second annual ball, which was a success both socially and financially. We meet every first and third Monday in the K. of P. Hall.

Our attendance at the meetings are small of late on account of so many of our sisters having moved away. But we hope to initiate a few ladies in the right near future.

Neches Queen Lodge No. 590 had to drape its charter for two noble brothers, Earnest Brocker and John Hensarling, who were called to the great beyond. Brother Brocker and his engineer, D. D. Barfield, were both scalded to death by their engine turning over with them in a washout near Brookland, Texas, and Brother Hensarling's death was caused from injuries received in a wreck near Athens, Texas. It is so hard to give the boys up. But God's will, not ours, be done. Brother Brocker leaves a father, four brothers and a sister to mourn his untimely death. Brother Hensarling leaves an aged father, mother, two sisters and one brother. Mr. Barfield belonged to the B. of L. E., and leaves a young wife and a dear little baby boy, and, he being a brother-in-law of mine, I wish to thank the brothers in my dear sister's name for their kind assistance extended us during her sore bereavement. The members of L. S. 107 and B. of L. F. 590 extend to the families of those three boys their most heartfelt sympathy.

Silently, softly we bore them forth to their dark and silent bed.
Weep not that they're lost to earth.
Weep not that their spirit's fled.
One last look, one parting sigh, ah! too sad for words to tell,
Yet though tears may dim each eye. Hope we still and sigh, farewell.

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FROM L. S. 111—(*A Member, Green Bay, Wis.*) The officers and members of Baldwin Lodge, No. 111, desire to extend sympathy to Bro. William Doran in his sore bereavement through the loss of his wife and our sister, Lillian E. Doran.

Sister Doran passed away on June 10th after a short illness, and leaves her husband, two daughters, one son, a mother and two sisters to mourn her death. The deceased had a large circle of relatives and friends and was loved by all that knew her. She was a charter member of Baldwin Pride, and her loss will be deeply felt by its members. The funeral was largely attended and the many floral tributes testified to the high esteem in which she was held.

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Death Report.

L. Elizabeth Doran.—Lodge 111; died June 10, 1905; cause, acute tuberculosis. Insurance, $200.

Lena Lang.—Lodge 99; died June 13, 1905; cause lympho sarcoma. Insurance, $200.

Loretta Corrigan.—Lodge 20; died June 19, 1905; cause, coma following uræmic convulsions. Insurance, $200.

Mary Dudley.—Lodge 3; died June 26, 1905; cause, septicemia. Insurance, $200.

Quarterly Insurance Assessment.

(Second Series Numbers.)

Notice No. 11, for the Quarter ending Sept. 30, 1905.

GRAND LODGE
LADIES SOCIETY OF THE BROTHERHOOD OF LOCOMOTIVE FIREMEN.

Office of the
GRAND SECRETARY AND TREASURER.

BOONE, IOWA, Sept. 1, 1905.

To all Treasurers of Subordinate Lodges:

SISTERS—Assessment No. 11, for the quarter ending Sept. 30, 1905, is hereby levied upon all members holding membership in the Insurance Department of the Society on or before Sept. 1st, 1905. You will forward to this office so as to reach here on or before the tenth day of September, 1905, the sum of sixty (60) cents from each member carrying a $200 policy and one dollar and twenty ($1.20) cents from each member carrying a $400 policy, using the two printed blanks which accompany this notice.

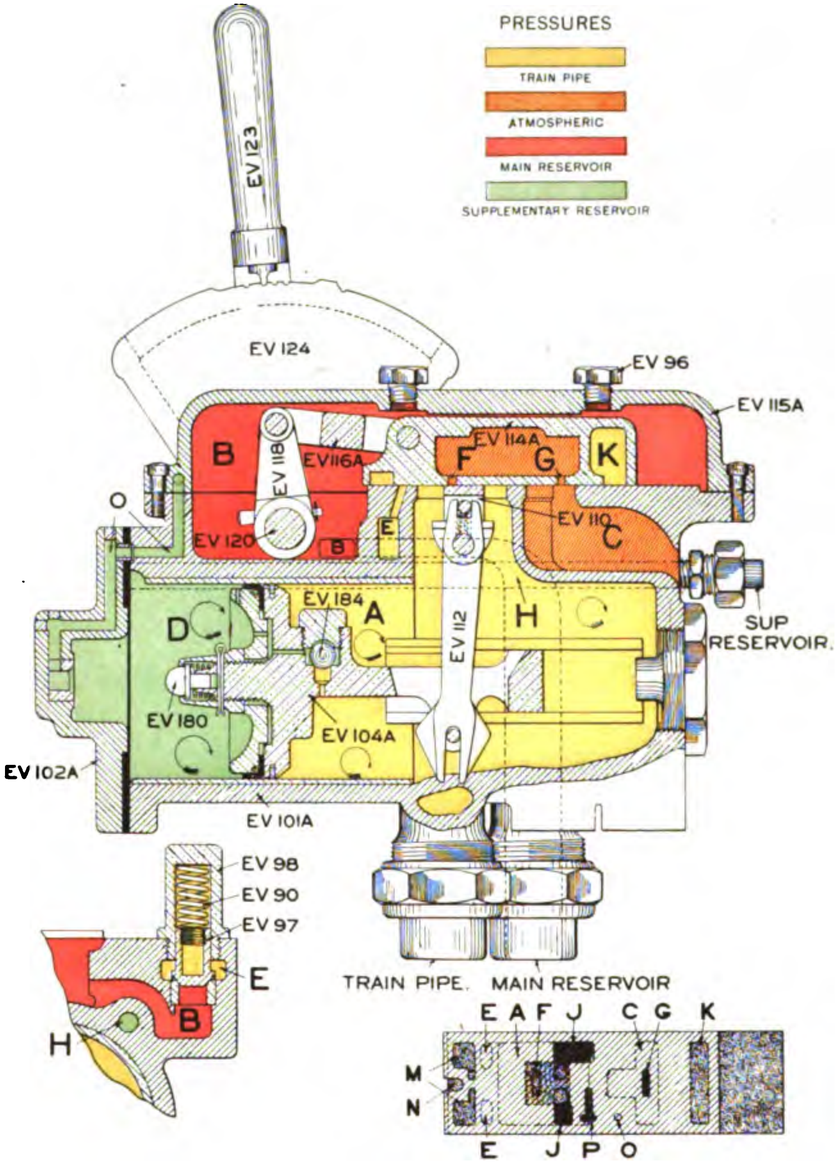
All remittances to be made by draft, postoffice or express money order, payable to "Grand Secretary and Treasurer, Ladies Society, B. of L. F."

Members initiated on and after Sept. 1, 1905, will not be liable for this assessment.

MARY E. DU BOIS,
Grand Secretary and Treasurer.
GEORGIE M. SARGENT,
Grand President.

NOTE.—We enclose *two printed* blanks upon which Treasurers will make returns to the Grand Lodge for the above assessments. Both statements will be filled out *exactly* alike and sent with returns. If all names do not appear in the printed list, they will be added. If any corrections are necessary they can be made by the Treasurer. One of the printed statements, with receipt, will be returned to the Treasurer.

For the names, lodge number, cause of death, etc., of deceased sisters in the payment of whose claim this Assessment is levied, see issue of The Brotherhood of Locomotive Firemen's Magazine, where detailed statement of the same will be given in department devoted to the Society.



Locomotive Firemen's Magazine Educational Charts

NEW YORK AIR BRAKE SERIES

PLATE XI—ENGINEER'S BRAKE VALVE, STYLE B
(Automatic Lap Position)

BROTHERHOOD OF
Locomotive Firemen's Magazine
TECHNICAL DEPARTMENT
JOHN F. McNAMEE
EDITOR AND MANAGER
SUBSCRIPTION PRICE
$1.50 PER YEAR

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VOL. 39 NO. 3 INDIANAPOLIS, IND. SEPTEMBER 1905

Plate XI—Engineer's Brake Valve, Style B (Automatic Lap Position).

Plate XI of the New York Air-Brake Series of the Locomotive Firemen's Magazine Educational Charts shows the brake valve in automatic lap position.

The handle being in the service graduating notch, and the ports *F*, *G* and *C* open to the atmosphere, as shown in Plate X, the brake-pipe pressure reduces in chamber *A*, in front of the piston *E V 104A*. The air behind the piston in chamber *D*, which normally is at the same pressure as that in chamber *A*, and which is a part of the supplementary reservoir air, expands and moves the piston forward; the piston, by means of lever *E V 112*, moves the cut off, or graduating slide valve, *E V 110* backward along the face of main slide valve *E V 114A* until it laps, or blanks, port *F*. When this port is lapped, escape of brake-pipe air through the service ports is cut off, and the brake valve is automatically lapped.

The diagram of the valve face and seat (lower right-hand view) shows the cut-off valve in its position over port *F*. With port *F* covered in this manner, ports *G* and *C*, which lead from port *F* to the atmosphere, are practically blanked.

The circular arrows, shown in chambers *A* and *D*, indicate that there is no flow of air in any direction through the valve, and, consequently, no change in pressure and no motion of the piston.

If it is desired to make a further service reduction after the valve has automatically lapped itself, moving the handle into the next service graduating notch will move main slide valve *E V 114A* backward a sufficient distance to carry port *F* away from the cut-off valve *E V 110*, and permit brake-pipe air again to flow through ports *F*, *G* and *C* until piston *E V 104A* and lever *112* move valve *E V 110* back far enough to cover port *F*.

When the handle is placed in the fifth service graduating notch the total reduction in brake-pipe pressure, which will be had before port *F* is again lapped automatically, will be sufficient to set the brakes in full; that is, equalize the auxiliary and the brake cylinder pressures.

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The Deadly Facing Point.

Since the disastrous wreck to the Twentieth Century Limited on the Lake Shore Railroad, which occurred at Mentor, Ohio. recently, the press of the country has commented freely on the dangers of the facing point switch and advocated its abolition in favor of trailing switches. Of course on single track roads this would be well-nigh impossible, for what would be a trailing switch for a train moving in one direction would be a facing point switch for a train running in the opposite direction. On double track roads, however, it is possible to eliminate much of the danger of facing point switches by placing such switches only at terminals or in slow speed districts. This would necessitate a train desirous of taking a sidetrack having to pull by the switch and back in, instead of heading in as at present, causing consequent delay. It would seem, however, that with due precaution such delays might be reduced to a minimum, and would be far preferable to the risks incurred through the indiscriminate use of facing point switches. Picture, if you can, the thoughts which enter the enginemen's minds when approaching a facing point switch at high speed and find it set for a siding. To stay on the engine seems sure death to them, while to jump gives them but one chance in a thousand of saving their lives. On the other hand, were it a trailing switch they know that the train will remain on the track, and the worst that will happen will be a bent or broken rod connecting the switch-points with the target or lever, as the flanges of the wheels will force the switch-points over into position as if the switch had been properly set. The Engineering News of July 6, 1905, comments on the above subject under the head of "Safeguarding Railway Switches," as follows:

We alluded last week to the abolition of facing point switches on double-track railways as one lesson of the disastrous wreck at Mentor, O. It has been publicly announced since then that official orders have been issued to change all switches on the main line of the Lake Shore and Michigan Southern Railway to trailing switches. We presume this does not mean actually all, for there are doubtless places where such a change would be a very serious expense and inconvenience; and in large yards, where turn-outs from the main line are numerous, speed ought to be reduced anyway, so that facing point switches there would not be so objectionable.

As was naturally to be expected, the Mentor wreck has drawn general attention to the subject of safer switches and much discussion is going on in the public press as to how switches may best be protected.

One authority lays down the rule that all switches should have a distant signal connected with the switch-stand, which should be moved automatically in harmony with the movement of the switch-stand target. This plan may look well on paper, but in our opinion it would lead to greater dangers even than those which it proposes to avoid.

We have for years strongly advocated the greater use of distant signals, in connection with block signaling installations and with such work as the protection of railway grade-crossings or drawbridges; but the proposal to attach distant signals to switch-stands appears to be a serious mistake. The distant signal is a proper device for use in connection with a home signal which is at any time likely to stand at danger; it is highly improper for use with such a home signal as a switch-stand target, which the engine-runner always expects to find at safety.

A distant signal, of course, merely repeats the indications of the home signal; it gives the engine-runner warning of the position of the home signal far enough in advance to enable him to stop before reaching it. But in all ordinary weathers and with trains running at ordinary speeds, an engine-runner can read the home signal so far back that he can stop anyway before reaching it and the distant signal is not needed at all.

What we do need it for is the high-speed trains. These high-speed trains, however, are never supposed to run against open switches. The engine-runner of such a train when at full speed always approaches a switch expecting to find it closed, as it always is unless some one has blundered. Not once in perhaps a hundred thousand times does the engine-runner of a train at full speed find a switch open on the track ahead. In the rare cases where a switch is found open, if the switch-stand has a proper target, the engine-runner can and almost invariably does discover it far enough back to stop or materially check the speed of his train before he reaches the switch.

All we would gain by attaching a distant signal to a switch-stand, therefore, would be in the case of the most unusual combination of a misplaced switch, a fast train, and weather conditions preventing the engine-runner from seeing the switch-target until close onto it.

There would, on the other hand, be a distinct loss from the multiplication of signals. Here is a switch-target which stands straight, say every hundred thousand times it is passed.

All we can expect is that an engine-runner will unconsciously note the position of the target as he approaches it. He will not and ought not to give it the same degree of attention that he does the semaphore at the entrance of a block or at a grade-crossing. If now we put up a signal to duplicate the indications of the switch-target say 2,000 feet back, we are putting up a signal to which engine-runners will pay very little attention. If they find it at danger, they will lay it to derangement of the connections and the chances are that nine times out of ten they will be right. We must also face the possibility that sometime this signal will, through derangement of the connections, stand at safety when the switch ahead is open and will thus actually mislead the engineer. We are strongly of the opinion therefore that money spent to erect and maintain distant signals in connection with switches is worse than wasted. Any signal which is not actually and directly of importance to the engineer to tell him whether the road ahead is safe, is not merely useless, but dangerous. It is a needless strain upon his attention and tends to weaken in some degree the importance and authority of the signals which he ought to read.

What then should be done to safeguard switches? The answer is of course familiar to all our readers who are familiar with good signaling practice. Main-line switches ought to be so connected with the track circuit of the block system that the block signal itself will indicate whether every switch in the block is closed. If any are open, the signal will remain at danger. It may be said that a very small mileage of railway in this country is equipped with track-circuit blocking; but lines which are not so equipped have no business running trains at 60 to 70 miles an hour.

Facing point switches ought to be avoided on double-track lines, as we have already said, not only because of the chance of the switch being misplaced, but because there is undeniably a greater chance of derailment at a switch, even when it is perfectly closed and locked, when a train runs against the points than when it trails over them.

Every main-line switch ought to have a target attached to it sufficiently large and prominent to enable an engine-runner to tell the position the switch is in in clear weather at least 2,000 feet away on the facing side. The construction of the switch should be such as to ensure tight closing of the points when the switch is locked; and safety-guards in front of the points to protect them from being struck by hanging chains or brake rigging or loose wheels are a desirable addition.

The Railway and Engineering Review has the following to say on the same subject:

Just now the daily press is publishing numerous discussions of the dangers of facing point switches. In many instances these accounts purport to be based upon interviews with practical railroad men. At this time there is nothing new under the sun that can be said regarding the dangerous features of the facing point switch. We have the simple proposition that, if the switch is left open, a train will take the sidetrack unless there is some visible signal to give warning. For this reason the scheme of interlocking the switch-stand or the switch-points of facing point switches with distant signals was inaugurated many years ago, and double-track roads, all over the country, are extensively provided with such means of protection to the traffic. The necessity for such devices is not, therefore, a development coincident with the fast speeds of recent years. The only comment which need be made touching this point is that the faster trains run the harder they are liable to strike in collisions, and when they become derailed at full speed severe smashups must be expected. Of course, it goes without saying that facing point switches on double track should be avoided as far as may be practicable, and this principle of railroading has been generally recognized for a long time. It has been common practice to lay crossovers trailing to the currents of the traffic, and to make sidings with stub ends and trailing switches as far as possible. Such an arrangement requires, of course, that trains shall run past the switch and back in when taking the siding. Double-end sidetracks are, however, quite convenient where a good deal of switching must be done, particularly where the switching is by road engines which must back through the crossover from the opposite track. Wherever these double-end sidings are retained, the facing points should be protected by an interlocked distant signal, or by automatic block signaling, which performs the same function. As an extra precaution some roads use an indicator, either visible or audible, at the switch, under the control of a track circuit, so that any person about to open the switch will receive warning if a train has passed the signal controlling the block. The Fitchburg Railroad some years ago installed track circuits to control a lock on the lever of the switch-stand, so that when a train has passed the distant signal in the clear position and entered the track-circuit section, the switch is locked up and can not be thrown until after the train has passed it.

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The Breakage of Locomotive Frames.

Locomotive frame breakage is becoming a serious matter which troubles everybody who has to do with large locomotives. It does not occur often with the lighter engines of eight and ten years ago, but is really mysterious in recent designs. Frames have been strengthened, stiffened and widened without overcoming the trouble or even discovering the reason for it. Some think it due to water in the cylinders and attribute it to the piston valve until they learn that slide valve engines are as bad. Some say it is due to the frequent reversal of the very heavy stresses from the cylinders, coming eccentrically upon the front sections of the frames, between the cylinders and leading drivers, where most of the breaks occur.

On the Lake Shore it has been believed to be due to twisting of the frames, and thus far engines fitted with deep cross-braces have not developed this weakness. The new Class K 2—6—2 type passenger locomotives of this road have 6-inch frames, which are braced in this way. These will be watched with great interest.

Pedestal binders are now almost always made of rectangular section, with ample flat bearing surfaces in the form of notches against which the ends of their jaws bear, and these have prevented most of the breakage of frames over the driving boxes. When bolts are used, water in the cylinders tends to stretch them, unless they are made very large, and when large enough they are too large for convenience in the roundhouse.

What seems to be needed is a combination of two remedies: First, to brace the frames laterally, as is done by the Lake Shore, and, second, to reduce the frame stresses, as is done in the four-cylinder balanced compounds. This is one important argument in favor of these compounds where the frame stresses between the forward driving axle and the cylinders are almost entirely neutralized.

Another possible precaution is to substitute plate for bar frames, and this is an apparently important possibility. Frame breakage has become so serious as to justify a trial of plate frames in two-cylinder engines, and it would be wise to investigate the possibilities of such construction in American practice under present conditions. But the plate frames will undoubtedly require the lateral bracing against twisting stresses, as this bracing has for years been practiced in foreign locomotive construction.—American Engineer and Railroad Journal.

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Western Railroad Activities.[*]

Railroad Operations in California.—Though comparatively a small railway system, the California and Northwestern Company has not been and is not now idle in the way of forwarding its transportation interests. During the past year a great many improvements have been made all along its sevaral hundred miles of road. New rolling stock has been added, and general construction repairs have been made all along the trunk line and its several radiating feeders.

Recently the North Shore System has been practically absorbed by the California and Northwestern, thus greatly widening the field of operation of the latter company. The lines of these now consolidated systems extend through a most fertile and productive part of California—embracing the counties of Marin, Napa, Sonoma and Mendocino. The roads were never in better operating condition than at present, and general traffic is reported excellent.

About six months ago the wooden depot and station at the city of Santa Rosa, on the main line of the C. & N. W., was totally destroyed by fire. Cars, freight and other property were also consumed, involving a heavy loss. In place of the depot destroyed a new depot building has just been completed. It is of ample accommodation and of handsome architectural style. The building is fireproof, being constructed of Colusa County sandstone, with slate roof. This new depot cost about $25,000.

The present northern terminus of the North Shore is Cazadero, and that of the California and Northwestern is Sherwood. Surveys have been extended from Sherwood northward as far as Eureka, the purpose being to extend the road to that point, thus connecting with Pacific coastwise traffic.

Very recently the California Western Railroad and Navigation Company was organized for the purpose of constructing a railroad in Mendocino County, with a terminus at Fort Bragg, on the ocean shore. This road is to connect with the Union Lumber Company's railway, and, with its branches, will have a length of over 70 miles. The capital stock is placed at $1,000,000. This new road will form a junction with that of the C. & N. W., and thus open up a wide region which has hitherto been excluded from railroad communication.

To Build an Immense Railroad Yard.—So rapid and constant has been the general increase of Western traffic that rolling stock is being added to the railroad companies whose Pacific Coast termini is San Francisco. With the increase of rolling stock comes the necessity for more terminal space in which to operate. Especially is this the condition of the Southern Pacific, and the position is only emphasized by the competition that comes from ocean traffic, from the encroachments of the Santa Fe, and the promised early rivalry of the Western Pacific (Gould System). More room in which to operate their trains is becoming an imperative necessity with the Southern Pacific.

In connection with the Bay Shore Cut-Off, that company proposes to construct an immense yard—one that will afford ample accommodations and facilities for an indefinite period. This great yard

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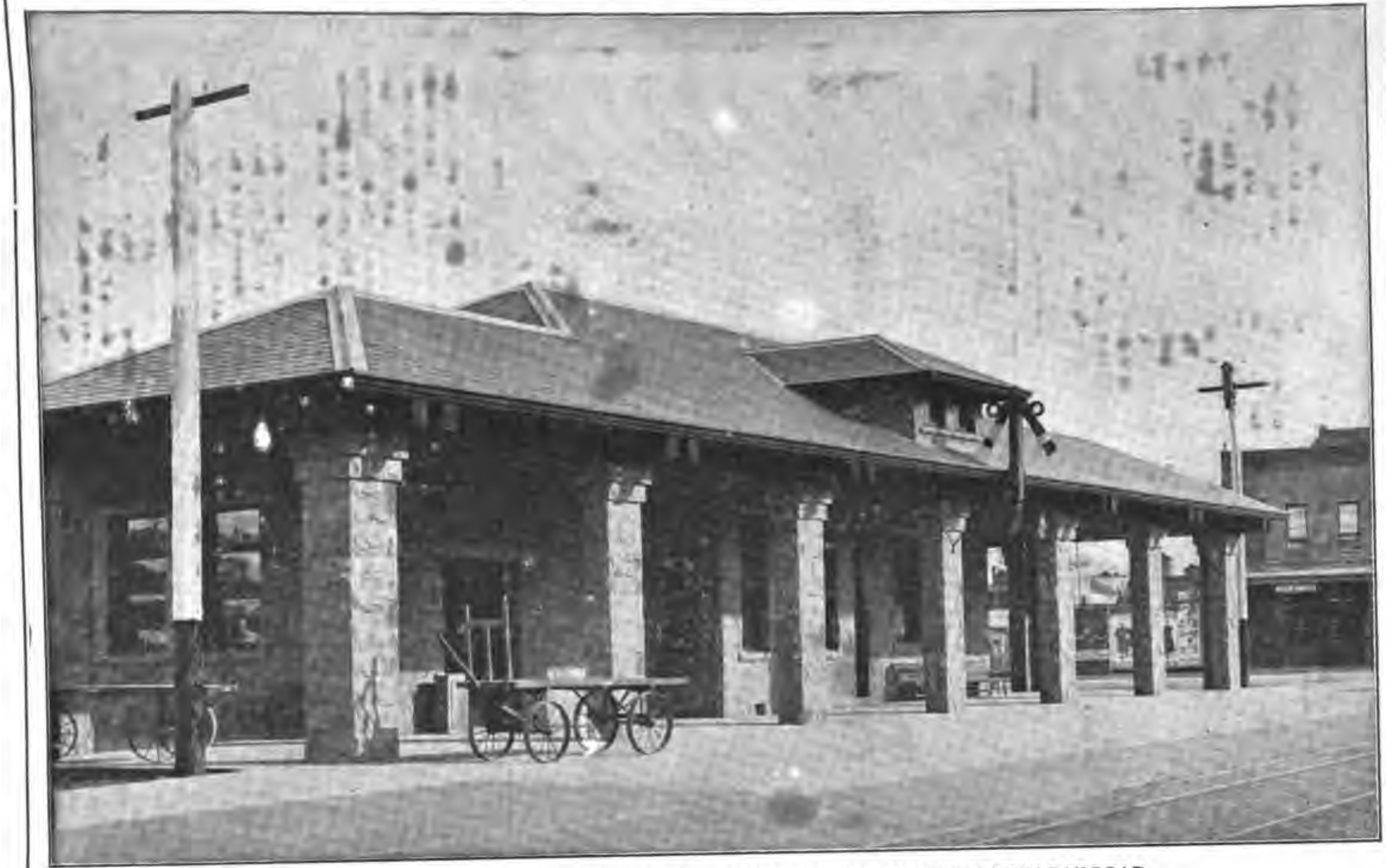
[*] Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.



NEW STONE DEPOT AT SANTA ROSA, CAL., CALIFORNIA AND NORTHWESTERN RAILROAD will be located just beyond the Six-Mile House, south of San Francisco, and in what is known as the Visitacion Valley. An arm of San Francisco Bay extends northward toward the base of a range of very high timberless hills, across which the railroad on the line of the cut-off is now being constructed. Between the new road and the base of the hills stretches a wide expanse of water—the superficial area of which is computed at about 400 acres.

The plan is to fill in all the space between the railroad and the winding shore line, and thereon to establish a great freight yard. This will certainly be a giant undertaking, requiring millions of cubic yards of stone and earth. The deepest part of the fill will be along the line of the new (cut-off) road, being about twenty feet at high tide. The width of the watery arm where the road crosses it is 5,700 feet—more than a mile. Gradually the waters shoal as the shores are approached, until they cease. Around the shores and for some distance back stretch wide tide marshes. All these will require to be filled up for several yards to afford a solid foundation for the railroad yards.

As the entire bed of this watery arm is composed of mud and slime, the quantity of filling will have to be greatly increased, more than if it were of firm sand or rock. From this it may be understood what an immense engineering task it will be to fill up this wide and deep expanse of the bay. This vast piece of work has been determined upon by the railroad company, as more extensive facilities are an absolute necessity. However, as yet the engineers have not completed their figures and estimates. The total quantities of filling material, and the total amount of money required, have not yet been made public, and therefore can not be stated at present. From the nature and extent of the work these figures will be very large.

STRETCH OF BAY, LOOKING NORTHWEST

Work, it is expected, will soon be commenced on this colossal fill. The material can be obtained in exhaustless quantities from the neighboring lofty hills whose bases skirt the shores of the bay. Gravity is all in favor of the great project—for it will be a "down haul" with a vengeance.

A railroad is now being constructed from the north end of the bay, southward, and will intersect at a right angle the main line about midway of where it crosses the arm of the sea. This branch line will greatly facilitate the work of filling up the bay when operations begin.

This immense freight yard will be located near the city, and when completed will afford ample room, facilities, etc., for many years to come.

In addition to making the vast fill in

the bay at Visitacion Valley, the Southern Pacific intends to construct freight yards all along the shores of the Bay from a point just beyond the city and county line for three and a half and possibly four miles towards the south, the yards to have a width of from one to three-quarters of a mile.

Forty-four tracks will be laid, and it is intended to make this eventually the principal freight yard in California. The yards which have been planned will, it is expected, be capable of handling San Francisco's trade during the next 50 years without any enlargement.

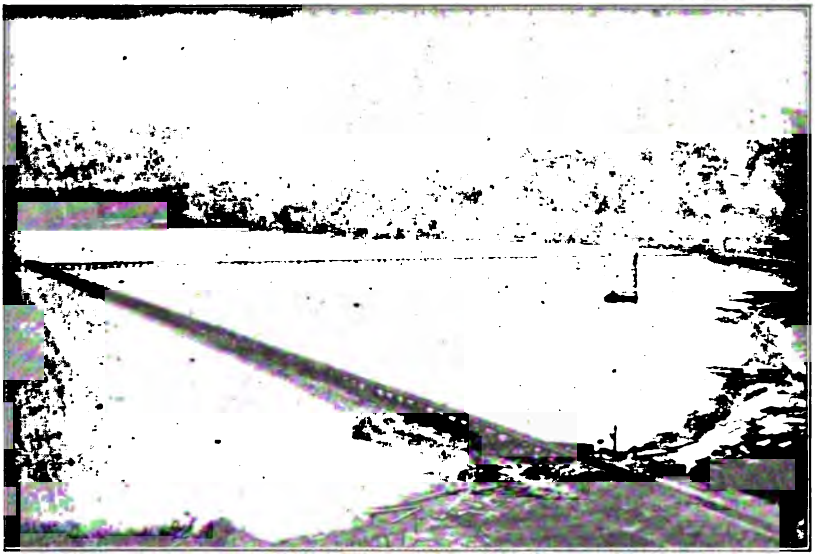
At present there are a number of small freight yards scattered throughout the State, but San Francisco has only a few totally inadequate tracks; but when the plans are consummated all the freight of Central and Northern California will be handled through the new yards. Los Angeles will handle the freight for the south.

Although the land has been bought in the names of others, fully nine miles of lots adjoining the bay have been acquired by the railroad. The water lots in this vast tract are being improved, and it is stated that wharves will be constructed which will be capable of handling the immense trade with the Orient.

It is the desire of the railroad that this business should be handled through San Francisco, and therefore the corporation is sparing no pains to attract trans-Pacific commerce. It is thought that the system of freight yards, tracks, warehouses, car shops, and repair and construction works will, when completed, give employment to thousands of workmen.

In addition to this it is the intention of the Southern Pacific to make such attractive offers that many of the importing and exporting houses of San Francisco will locate in the Bay Shore district. Spur tracks will be run from the yards to firms in the vicinity, thus enabling shippers to load their cars at their doors. The proximity of the docks will greatly facilitate the loading of shipments by boat, an important feature in the plan. When these plans are fully carried out, the Bay Shore district will be the commercial center of the largest city west of the Missouri River.

The plans of this immense center are not, however, confined to the freight yards. The Southern Pacific Company is building a very large passenger depot near the San Bruno and Visitacion avenues, which will be one of the finest on the coast. Though not as important as



SHOWING AREA OF BAY TO BE FILLED—LOOKING SOUTHWEST the proposed freight yards, this depot will be a large factor in San Francisco.

The work that is already begun is being rapidly pushed forward, and although it will require some years to complete it, no time is being lost. Three tunnels are now being bored, besides the Bay Shore cut-off. One of these tunnels, about one mile and a quarter long, extends from Thirty-second avenue, Bay View, to the site of the proposed passenger depot, between Five-mile House and the Six-mile House. Another, the same length, cuts under the St. Francis Orphan Asylum, while the third is in San Mateo County.

Secretary Taft and the Carquinez Bridge.—The project of the Southern Pacific to construct a giant bridge across the Carquinez Straits is meeting with the most determined opposition of all ship owners, steamboat companies, shippers and all classes interested in ocean traffic and marine matters. Never in the commercial history of San Francisco has there been such a united determination to prevent if possible the building of such an obstruction to navigation. Of course the project has been and is still being pushed with all the immense pressure of a great railway system behind it. For some time the *pros* and *cons* of this very important question have been engrossing the consideration of the War Department, but as yet no definite conclusion has been reached.

The spanning of the Carquinez Straits with a railroad bridge will be an immense feat of engineering, the expanse of water being nearly one mile. It is estimated that $3,000,000 will be required to construct such a bridge.

Secretary of War Taft recently passed through San Francisco on his way to the Orient. While in San Francisco, Secretary Taft made a careful and personal examination of Carquinez Straits at the point where the railroad company proposes to construct the bridge. In speaking of the question he said:

"I expect to appoint a special engineer to consider the Carquinez matter. A proposition involving such large interests should not be left to the decision of one man.

"With engineers, as with doctors, it is well to have the opinion of a number of them. Our army engineers are excellent, but I think a civilian expert should be called in. The particular man for that position has not yet been selected positively, and no definite steps will be taken until after my return from the Orient.

"There is no question but that a bridge must be built. The interest of San Francisco, already a great and flourishing metropolis, demands it. Nowhere in the civilized world near the great avenues of commerce will you find straits of the character of Carquinez unbridged.

"The question to be considered is, what kind of a bridge will accommodate the land traffic without interfering too seriously with the traffic by water? All bridges are in the nature of obstructions to shipping and navigation, but with the right design this can be reduced to a minimum."

Secretary Taft stated that he would act in a judicial capacity only, and that the initiative for a bridge would not come from him.

"All I can do," he said, "is to pass upon such plans as are proposed. It may be that the construction of the bridge will be delayed for some time. It all depends upon the necessities of traffic. Perhaps it will not at present bear the expense necessary to construct a proper bridge."

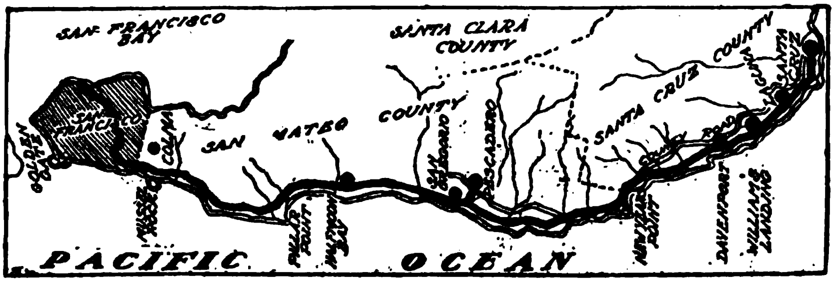
Assurances were given by Secretary Taft that he would not approve of any designs which were not of a character to preserve the necessary freedom of the straits to navigation. "It is a question of compromise," he declared, "the interest of interstate commerce and of shippers needing both to be carefully and impartially weighed." In finally passing upon this most important question, he concluded: "I shall most scrupulously guard the common interest of our traffic in its broadest signification."

Ocean Shore Electric Railroad.—It is the purpose of the Ocean Shore Electric Railroad Company to construct a new line between San Francisco and Santa Cruz, a distance of 83 miles. The Southern Pacific now has two lines between Santa Cruz and San Francisco, and no competing company. The Ocean Shore Electric Company proposes building a line paralleling the ocean beach. This new route will invade a rich and splendid region heretofore deprived of direct railway transportation. For that reason the project is a most important one, both to San Francisco and Santa Cruz, and the intermediate territory.

For a long time the Southern Pacific has purposed building a shore route between these two cities, but somehow has never got down to the work. However, the Ocean Shore line is pushing the work forward with all possible activity. The line of the Ocean Shore will pass through and tap Pescadero Valley, one of the most fertile regions in California. It will also pass through the property of the Santa Cruz Lime Company where the latter has in operation its giant works; and also where the Santa Cruz Portland Cement Company is now building its new million-dollar cement plant. The new line will also pass through a number of thriving towns and villages. Grading and other work is in progress all along the route.

Some difficulty is being experienced just now in getting to the Santa Cruz ocean beach, caused by opposition from the Southern Pacific and other corporations. Condemnation proceedings, however, have been instituted by the Ocean Shore Company.

Vice-President Bowen, of the Ocean Shore, declares that his road will have no trouble in reaching the Santa Cruz water front. The citizens of the whole coast country and Santa Cruz are warmly welcoming the advent of the new road, which promises to complete the construction within the next fifteen months, and to make the run between the two cities (83 miles) inside of two hours.



Line of Ocean Shore Railroad

Each car of the new line is to be equipped with 75 horse-power motors, guaranteed by the builders to maintain a schedule of 37½ miles per hour on a 2 per cent. grade, with stops on an average of every mile and a half.

The entire route has been located, and operations are being pushed forward actively. It is quite probable that the Southern Pacific will soon construct a road to parallel that of the Ocean Shore, as the territory is too rich to abandon to a rival company.

Enormous Railroad Fills and Cut.—To complete such colossal railroad fills as the famous "China Basin" and "Mission Bay," in San Francisco, vast masses of rock and stone were required. Literally, a small mountain located in the suburbs of South San Francisco was torn down by giant steam shovels, hauled away on trains, and dumped into the two arms of the bay.

The enormous cut will give one an idea of the immensity of the water gaps—particularly China Basin. The removal of the necessary masses of rock and earth has left a vast cut five hundred feet wide and several thousand feet long. In the center of this cut the rock and earth originally towered about two hundred feet, but four years of constant scooping out, and hauling away, have wrought the great work. No such a vast railroad cut can be found west of the Missouri River, if indeed east of it.

Aside from the use of the material for filling purposes, this large gap will serve one good end; it will enable the Southern Pacific to easily reach its terminal grounds at Mission Bay without boring a long and costly tunnel, for it is through this mighty cut that the new line will pass. Just how many cubic yards have been taken away would be difficult to now compute, but the figures will run away up into the millions.

Both of the great fills mentioned have been recently completed. The closing up of China Basin has proved an herculean task, a wonderful piece of railroad engineering; one requiring four years to complete, vast labor and involving immense sums. It is one enduring engineering monument of the Santa Fe System.

The initial work of filling was commenced early in May, 1901, and has but recently been finished. For four years six giant steam shovels and seven large dump trains were kept constantly at work tearing out and hauling material.

An arm of the bay covering fifty-four acres, varying in depth from ten to sixty feet, has been leveled up. To accomplish this colossal job about 3,000,000 cubic yards of stone and earth were required. In order to prevent tidal erosions, a great seawall composed of huge rocks was constructed all around the fill on the shore line. The Santa Fe System has a lease of this basin from the State for the period of fifty years. It has cost that system $2,155,000 to fill in the basin, and the land adjoining it, together with the property further south from which filling material was obtained, cost an additional $1,480,000—a total of $3,635,000.

A NARROW VIEW OF CHINA BASIN AS IT NOW APPEARS

The latter property will be either leased or sold by the company later for warehouses and manufacturing sites. In connection with its new terminal, the Santa Fe management have certain franchises from the city for industrial tracks. It is estimated that up to date (including the cost of its San Francisco, Oakland and Point Richmond terminals) it has cost the Santa Fe System about $15,000,000 to get north of Mojave into central and northern California. To this large aggregate is to be added the cost of filling China Basin, etc. Then, the necessary expenditure of laying a complicated web of terminal tracks and the erection of terminal buildings is yet to come to swell the total.

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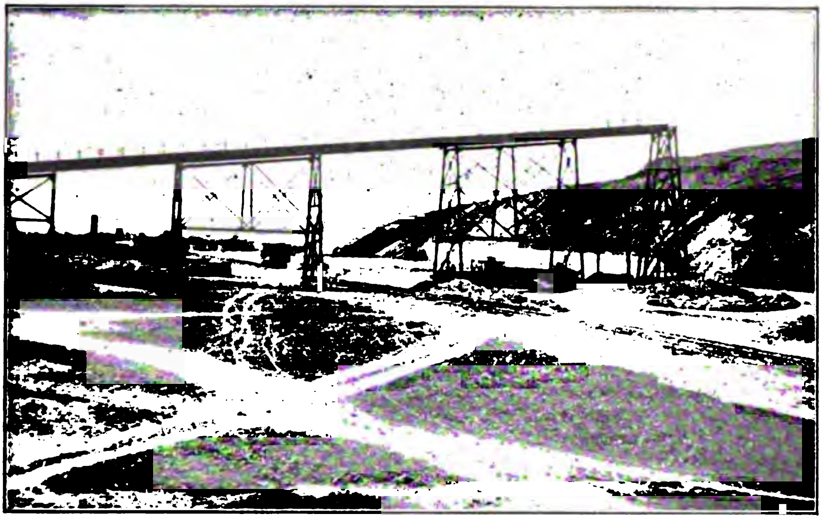
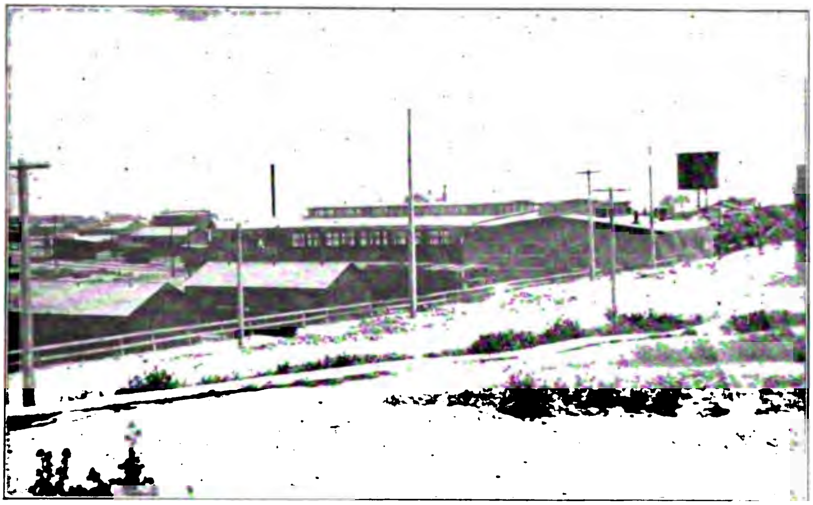
Since the filling in of Mission Bay was completed, the Southern Pacific has been very active. Surfacing, leveling up, and the laying of a network of terminal tracks has been constantly in progress. Where once were the glittering waters of San Francisco Bay is now a scene of railroad activities—the incessant coughing of iron horses, and the rushing to and fro of trains. A large new brick and stone roundhouse has also just been completed at the Mission Bay fill. Before completion of the new "Bay Shore Cut-off" a large and commodious depot will be erected.

Improvements to Railroad Shops.—At



A SMALL PART OF THE ENORMOUS CUT THAT FURNISHED THE VAST FILLING MATERIAL

present some very extensive and important additions are being made to the Oregon Railway and Navigation Company's car and machine shops at Portland, Oregon. The traffic of the O. R. & N. Co. has augmented to such an extent that it has become difficult to handle the heavy shop work of the company with the present shop facilities; and it is to provide ample means for keeping the rolling stock of the corporation in the best condition that the management has at last decided to make the changes and additions. These improvements include a machine shop



SHOWING A GLIMPSE OF NEW ROUNDHOUSE AND MISSION BAY FILL, THE LATTER TO THE LEFT AND IN THE DISTANCE

160x338 feet, to be erected at a cost of $95,000; a 22-stall addition to the present roundhouse, to cost $56,000; paint shop 80x544 feet, to cost $45,000; transfer tables 80x773 feet, $26,000; coal chutes, $5,000; storehouse 80x200 feet, $5,000, and new tracks running to all the additions, $15,000. This will make a total expenditure of $247,000, which, with $100,000 to be expended for new and additional machinery for the new buildings, will raise the total amount spent in improvements to $347,000.

Warm Rivalry Between Three Railroad Lines.—Just at the present time there is immense activity in railway circles with reference to the Klamath Falls region. This country is located both in northeastern California and southeastern Oregon, generally to the eastward of the famous Mount Shasta. Literally, there is a great scramble to see which rival line shall be the first to invade that very desirable territory. Three separate companies are now striving with might and main to reach the Klamath Basin in the lead of one another, with a view of securing from the United States Government large contracts for hauling freight. This freight will originate with the inauguration of work on the proposed reclamation of 500,000 acres of land in that region. One of these companies is the California and Northwestern Railroad. Their route to the Klamath Falls district leaves the Southern Pacific Company's line at Weed's Station and continues in a northeasterly direction along the southern edge of Shasta Valley, and around the northern side of Mount Shasta, to a point very near Grass Lake.

This part of the road has already been constructed by the Weed Lumber Company, before it was recently sold by its original owners, and it now devolves upon the California and Northwestern Railroad Company to determine the balance of the route to Klamath Falls, a distance of about 80 miles.

This corporation is not only very desirous of completing its road in advance of its rivals, in order to enjoy the privilege of hauling the Government's freight, but is further stimulated in its desire to complete the project as soon as possible in order to receive a bonus of $100,000, which the people of that section have already pledged to pay, provided the road is completed and in operation on March 31, 1907.

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The second company is the McCloud River Railroad Company, and operations are rapidly progressing with the work on a part of a contemplated road to Klamath Falls, beginning on the Southern Pacific's line at Upton and extending in an easterly direction to and along the south side of Mount Shasta to Bartles, a point directly south of the Klamath Basin and about 45 miles distant from Laird's Landing, the latter point being fifty miles from Klamath Falls.

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The third rival company is known as the Klamath Lake Railroad. A portion of this line has already been constructed. It leaves the Southern Pacific's line at Thrall, fifteen miles south of the northern boundary of California, following the Klamath River for about twelve miles and eventually crossing the Oregon boundary line through a rich timber region to its present terminus at Pokegama. The line must yet be constructed thirty-five miles further before the much coveted point shall have been reached.

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The California and Northwestern Company's people claim they have by far the most feasible route to the Falls, but it remains for them to demonstrate the fact in the early completion of their road. Klamath Falls lies about midway between the Upper and Lower Klamath Lakes and is in the very heart of the famous Klamath region, which is to be so greatly benefited by the Government's great reclamation projects.

For a long time the Southern Pacific Company has been figuring upon a branch feeder to the Klamath region; but suddenly it was concluded that as three other corporations are now striving to outdo each other in invading that rich territory, it is the part of "railroad wisdom" to keep aloof. No doubt Mr. Harriman also realizes that his line will ultimately be able to share the enormous freight expenditures originating with the Government's enterprises, for all the projected lines to the Klamath region must of necessity connect directly with his California-Orgeon trunk line.

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Westinghouse Compound Pump.*

The new design of Westinghouse compound pump consists of three cylinders, placed vertically in tandem. The two lower ones, joined by a thin centerpiece, constitute the air end of the pump, and these are surmounted by a centerpiece and steam cylinder of the regular Westinghouse type, so that in general appearance this new pump, although somewhat longer, is very similar to the regular Westinghouse pump. The design is very compact, and, since the air end only is compound, the additional features required are so similar to the old standard that the same simplicity of operation is assured.

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*By F. H. Parke in the Railroad Gazette.

Generally speaking, the compounding of the air end is done as follows: The two air cylinders are of the same diameter, each having a piston suitably connected to the piston rod, which is actuated by the steam piston. These two air pistons are further connected by a drum of smaller diameter than the inside diameter of the air cylinders in such a manner that the two pistons and drum form a sort of spool. The centerpiece between the air cylinders fits closely about the spool and has packing rings to prevent the passage of air from one cylinder to the other past the surface of the drum. The low-pressure air is drawn into the top of the upper cylinder and the bottom of the lower cylinder, and during compression is forced through suitable valves and passages to the annular volume formed between the spool, air cylinder walls and centerpiece. The final compression takes place in this annular volume and the air is forced out through the passages and valves in the centerpiece to the discharge opening. It will thus be observed that in each air cylinder both high and low pressures are single acting, but that these pressures on the air piston as a whole are double acting. The resultant effect, therefore, on the steam piston rod is almost the same as in the simple pump, but the air cylinder surface being twice as great as in the simple pump affords twice the opportunity for radiation of heat, and for that reason the temperature of the air discharge is considerably reduced for locomotive service.

Also by thus compounding the air end a much smaller steam cylinder can be used to operate the pump, thus causing a marked economy in steam consumption.

The present design of pump consists of a steam cylinder 8 inches in diameter by 12 inches stroke, and two air cylinders 11 inches in diameter by 12 inches stroke, while the small diameter of the spool is 8¾ inches. It is made for a capacity similar to that of the standard 11-inch pump, which has been on the market for some years, having air and steam cylinders each 11 inches in diameter by 12 inches stroke. Consequently, the compound pump has an 8-inch diameter cylinder instead of an 11-inch, as with the standard, and the steam consumption is thereby reduced to about 52 per cent. of the latter through this change alone. But by compounding the air end the capacity of the pump is increased about 16 per cent. when pumping against 90 pounds air pressure, due to the fact that the low pressure clearance volumes at the end of a compression stroke are filled with air at only about 40 pounds pressure, instead of 90 pounds, as in the single pump, and in the former case this pressure reduces to the atmospheric pressure much earlier during the intake stroke than is possible with the standard pump, consequently the volume of air drawn in at each stroke is that must greater. For this reason the saving per cubic foot of air compressed is greater than that shown by the difference in steam cylinder volume, and from tests made on the compound pump it appears that it requires only about 45 per cent. of the steam per cubic foot of free air compressed that is required for the standard 11-inch pump.

This, of course, is an immense saving of itself. But since the amount of air compressed per stroke is greater, the time required for the pump to operate is thereby diminished, and the amount of wear and cost of maintenance are correspondingly decreased.

The air valves, valve seats and valve cages are of the same pattern as those used in the 11-inch pump, while the steam valve mechanism corresponds exactly with that of the 9½-inch pump. Also the piston rings of the two air pistons are similar to the 11-inch pump and the steam piston rings correspond to the old standard 8-inch pump, many of which are still operating on railroads. The steam and air connections are also made up of standard pieces that are now in use on the other pumps, so that by the introduction of this new compound pump the amount of repair stock required outside of that already needed by railroad shops is very small.

Since the working parts are all modeled after those of the existing standards, the knowledge possessed by repairmen at the present time will serve them in making repairs on the new pump without any extended extra instruction. The rules already issued for operating air pumps will in nearly all cases apply to the new pump, so that its introduction, in almost every way, will cause no trouble or inconvenience to tne operating departments.

The greatly increased weight of cars, demanding larger brake cylinders, together with the greatly increased length of trains, has brought about the expenditure of a much greater quantity of air, and naturally the requirement of a larger air pump. It was this fact that brought out the 11-inch pump. With the introduction and general adoption of the high-speed brake and high-pressure control apparatus, the main reservoir pressure was increased from 90 to 120 pounds, consequently the work of the pump is greatly increased, and the consumption of steam by the air pump has been found to be a considerable factor of importance; and the introduction of an air pump designed to give the greatly increased amount of air, and at the same time require a much less amount of steam, has been made a necessity which both the railroads and the Westinghouse Air-Brake Company have for some time past recognized.

The illustrations will give a clear idea of the design and operation of the pump. The front view of the pump shows the general arrangement. It will be noticed that the steam cylinder is made both right and left hand, so that the steam and exhaust connections can be made on either side, or both on one side. The lower thin centerpiece connecting the two air cylinders contains the final discharge valves and orifice. Each air cylinder has a suction strainer, through which the air is drawn into its low-pressure volume.

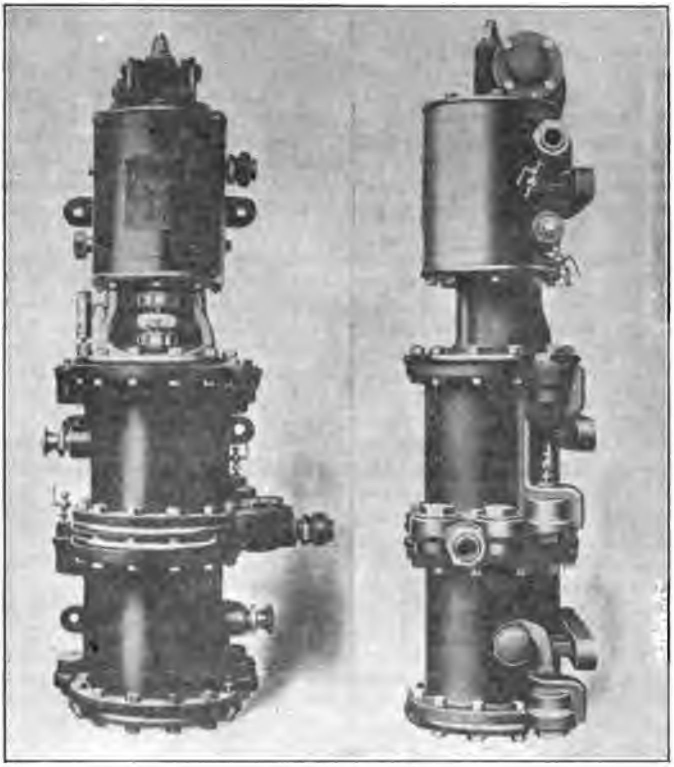

Fig. 1. FRONT AND SIDE VIEWS OF WESTINGHOUSE COMPOUND AIR PUMP

Fig. 1 is a side view of the pump, showing the position of the air valves and ports, as well as the lugs for supporting the pump in position.

Fig. 2 shows a front central section of

the pump and a side view partly in outline and partly in section. From this drawing the operation of the pump can easily be followed through. Steam enters from the governor at the steam inlet and passes through the valve, from thence it goes to either the top port *a*, *a*, to the cavity *A* over the main or the bottom of the steam cylinder in exactly the same manner as in the present 9½-inch or 11-inch pumps.

The operation of the air end, however, is quite difficult. On the down stroke air is drawn in through the upper air inlet on the left-hand side of the air cylinder; it passes through the passage *m*, receiving valve *86*, m_1, to the low-pressure volume above piston *66*. When the

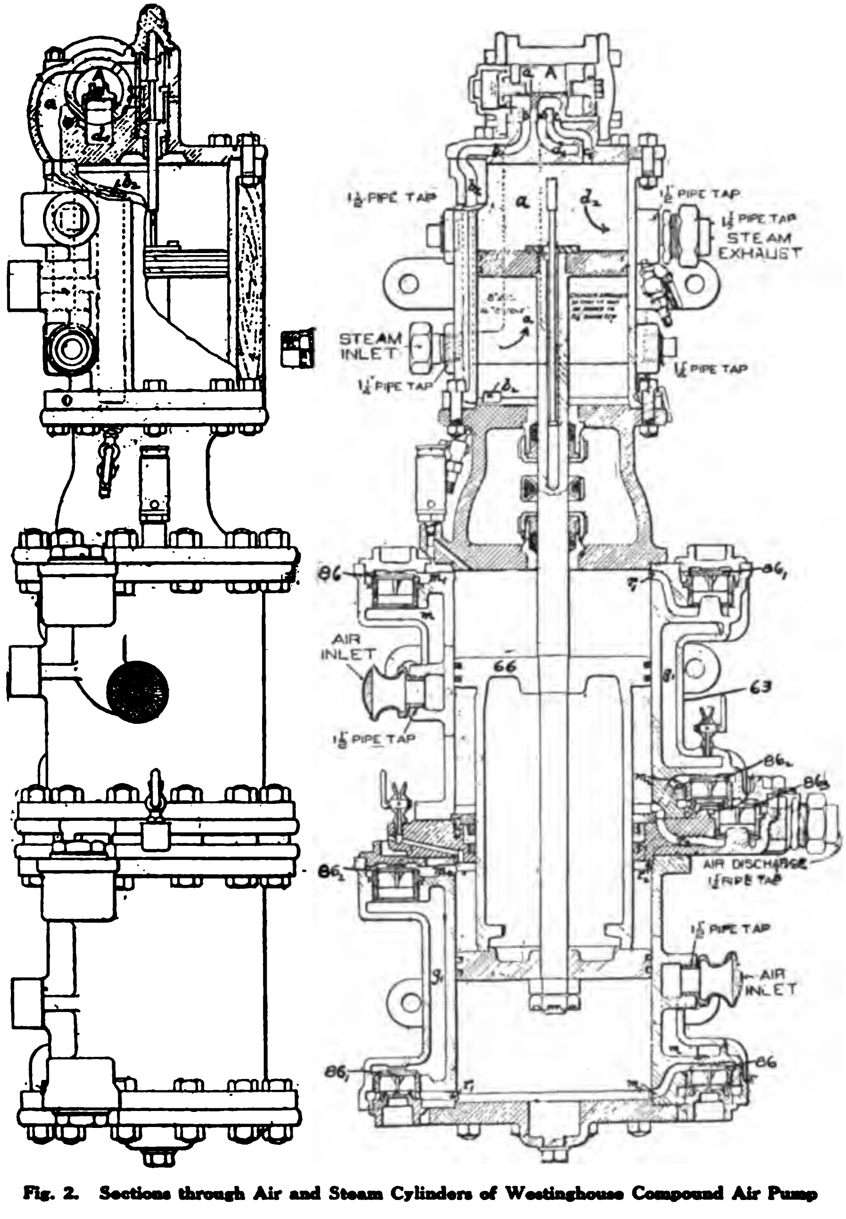

Fig. 2. Sections through Air and Steam Cylinders of Westinghouse Compound Air Pump

piston reaches the lower limit of its stroke and starts upward, this air is compressed until the upper discharge valve *86_1* (on the upper right-hand side of the cylinder) is raised, then the air is forced through port r_1, discharge valve *86_1*, passage g_1, receiving valve *86_2* and port m_2 to the annular cavity between the drum portion of piston *66* and cylinder *68*. Since this volume is much smaller than the low-pressure volume, the air is being compressed during its passage from the low-pressure to the high pressure volume, until, when the piston reaches the upper limit of its stroke, the air in the low-pressure clearance passages and high-pressure volume has reached the intermediate pressure of approximately 40 pounds.

During the following down stroke this high-pressure air is compressed until it raises the final discharge valve *86_3*, when it passes through port r_2 and the discharge valve to the discharge orifice in the centerpiece between the air cylinders.

This same operation occurs in the lower cylinder when the piston moves in the opposite direction from that described above, and as corresponding passages are designated by the same letter, the operation can be readily followed through from the description just given.

The air cylinder is lubricated by three oil cups, as shown on Fig. 2. The upper end receilves its oil from the automatic oil cup placed just to the left on the upper centerpiece. The piston drum receives its lubrication by the oil from the cup connecting with passage g_1 in the upper air cylinder, and is drawn into the high-pressure volume by the air as it goes from the low-pressure to the high. The lower end of the air piston is lubricated by the oil cup situated on the left side of the lower centerpiece. The last two oil cups mentioned are old style air cylinder oil cups, whereas the other, and that in the front view of the pump, are the new automatic-air cylinder oil cups. This cup can readily be used for the upper low-pressure cylinder whenever desired. It is thus seen that the complication due to compounding by this design is materially reduced, and all parts are made strong and durable and as nearly like standard simple pumps as it is possible to make them.

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What Will Be the Future Railway Track for Heavy Traffic?

"Half a dozen years ago," says Engineering News, "in our issue of January 5, 1899, there was published an article and an editorial proposing a permanent track construction for steam railways of heavy traffic, embodying longitudinal concrete supports for the rails, and presenting detail designs for a track construction of this sort.

"In view of the amount of time, labor and money which is being expended by hopeful inventors and their financial backers in the development of various forms of concrete cross-ties, reinforced concrete cross-ties and steel cross-ties, it seems well worth while to return to the subject again. By way of illustration we may note here that at the recent Railway Appliance Exhibition at Washington there were four different exhibitors of concrete ties and three exhibitors of steel ties, and only one exhibit of a concrete longitudinal track construction. Yet there are very strong reasons for believing that when the time comes that the present makeshift track construction which we miscall 'permanent way' is displaced by something really permanent, it will be a longitudinal system, rather than a cross-tie system.

"In view of the present practically universal use of wooden cross-ties in railway track, it may seem extravagant to predict so radical a change; but to engineers who are aware how widely and successfully the longitudinal system of rail supports has been used, the proposal will not appear by any means revolutionary.

"For a great many years the longitudinal system was the standard track construction on the Great Western Railway, of England, and it is still in place on a good many sidings on that railway. In Germany for a long time the longitudinal system was in nearly as extensive use as the cross-tie system.

"It is important to note the reasons which led to the longitudinal system being abandoned and the cross-tie system substituted. These were, first, the difficulty in draining the space between the rails. The ballast under the longitudinals sometimes became packed so that water would not freely escape through it to either side, but would soak in and soften the subgrade. Second, the necessity with the longitudinal system of providing tie-bars to hold the rails to gauge. Third, with wooden longitudinals, which sooner or later decay and have to be removed, it is quite a difficult matter to take a defective timber out of the track and replace it with a new one, on a busy road, where such work must be done between trains. Indeed, we are informed that this last consideration was more important than any other in bringing about the change to cross-ties on the Great Western Railway. Fourth, with wooden longitudinals there is more difficulty in placing the rail supports on sharp curves than with the cross-tie system.

"But with a system of concrete longitudinals of substantial and permanent construction, the reasons above set forth for preferring cross-supports for the rail to longitudinal supports, nearly all disappear. It is as easy to form concrete to a curve as to a straight line. The concrete support being permanent, facility of removal for repairs will be no longer of any importance. Tie-rods to hold the rails to gauge will indeed be necessary, but can be easily applied at very small expense. It needs, therefore, only provision for drainage of the space between the rails to eliminate the reasons that originally led to the laying of rails on wooden cross-ties instead of longitudinal timbers.

"Let us add here, however, that still another controlling reason for the use of cross-ties in the pioneer days of railway construction was their very small cost. On most of the early American railway lines, for example, cross-ties were cut and hewed to shape in the forests adjacent to the line, and were furnished ready for laying at a cost of a few cents apiece, far below the cost at which sawed timber longitudinals could have been furnished. Actually, the cross-tie system belongs to the pioneer days of railway construction and the period when the primeval forests of the world have been exploited with as little thought of the future as if they could forever continue to pour forth an inexhaustible supply of timber products. That period, we need hardly say, is fast approaching its end.

"There is another very important reason why a change from the cross-tie system to the longitudinal system is well nigh certain to take place whenever a change is made from a wooden rail support to one of steel or concrete. In the cross-tie system the rail rests on a series of independent supports, and it is a practical impossibility to give each of these supports exactly the same foundation, or, in other words, to tamp them all exactly alike. The elasticity of the wooden cross-tie compensates for the imperfections of the track gang's work. The tie is compressed under the wheel load a considerable fraction of an inch, and if one tie is tamped harder than the others it is compressed a little more; or if it is more lightly tamped, a part of its proper share of the load is distributed to the ties on either side.

"Thus the wooden tie lends itself admirably to the cross-tie system of construction. Its elasticity serves to compensate for the unavoidable imperfection of the track gang's work. But suppose we substitute steel or concrete ties or independent supports in place of the wooden ties. These materials have no such large range of elastic motion as the wooden tie, and there can be no such distribution of the load with ties unequally supported. If a steel or concrete tie is lower than its fellows on either side, its load will go to them, and the rail must bridge the whole width of the gap. Conversely, if a steel tie is tamped high, it will receive the entire wheel load. The result is an uneven riding track, kinked rails and rail bases cutting into or crushing the ties.

"Of course, by careful track work these conditions can be minimized; and it is well known that steel ties, and even cast-iron ties, have actually been extensively used for years in some parts of the world; but what we want is a system that will reduce the present excessive amount of track work, not one which will require greater labor and expense than the present system to keep in order. It may be said that steel or concrete ties, when once bedded, would be more permanent than wooden ties, as they would not be subject to decay; but it is an inherent defect of the cross-tie system that the rail supporting structure is too shallow. An engineer would never design an important building and support it on wooden blocks bedded a few inches below the ground surface; and he would not consider the case much better if stone or concrete blocks were substituted for wooden. To make a permanent support for railway track we must carry our foundation course down deeper, just as we would a building foundation. But it is practically impossible with the cross-tie system to make the foundation much deeper than the thickness of the present wooden ties, for the trackmen could not reach under the ties to tamp them if the ties were, say, 12 to 16 inches in depth. There is not room enough between the ties to permit this, and it is, of course, out of the question to space the ties farther apart. All this points directly to the replacement of cross-ties with longitudinals whenever a really permanent system of track foundation replaces the present 'mud sill' system.

"Referring again to our proposal of

half a dozen years ago for concrete longitudinals, we note with interest support for this idea in a recent editorial in our contemporary, 'The Railroad Gazette,' entitled, 'The Track of the Future.' We quote at some length from it as follows:

> When the supply of timber for cross-tise becomes exhausted or the cost of good wooden ties becomes too great to warrant their use, what form of track support will the railroads adopt as a substitute for the wooden cross-tie system? . . . .
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> Whatever cause may lead to the final abandonment of the cross-tie system, its successor will probably be some form of continuous support. The arguments for and against the principle of continuous rail support are familiar to the practical railroad man, and need not be even reviewed here. It seems to be generally conceded that if some satisfactory form of longitudinal continuous support could be devised, the cost of which would compare favorably with the cross-tie system, it would meet with a prompt and hearty reception. There seem to be substantial engineering and economic reasons for believing that this track of the future will have for its support some combination of steel and concrete. For supplying permanent bearing surface on the roadbed, concrete seems to be the most promising material, while for supplying the strength and rigidity of the beam element, nothing is likely to rival rolled steel sections. Whatever the combination may be, the ballast course intermediate between the structure proper and the earth roadbed will doubtless be retained. Its superior capability to promote drainage, to distribute load and to supply a certain degree of elasticity to the track are likely to make it an indispensable element in the future, as it is now.
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> If a guess at this track of the future were to be hazarded, it would probably be as follows: It will be a longitudinal continuous bearing system. Upon strips of ballast sufficiently wide and deep will rest, under each rail, a concrete beam wide enough to supply ample bearing area, and 12 to 16 inches deep. It may or may not be steel-reinforced. Upon this concrete will be placed a rolled steel I-beam of special section not less than 10 inches deep, and weighing not less than 50 pounds per foot. Its bottom flange will be wide enough to supply sufficient bearing upon the concrete, or such width will be secured by a plate riveted to it, and its top flange will be wide enough to carry the special rail and its fastenings. It will be secured to the concrete by anchor bolts. The two beams—one under each rail—will be securely connected by tie-struts having sufficient vertical stiffness to hold the beams securely upright. The rail will differ radically from the present section, because its function will be different. Substantially, it will be a strip or bar of high grade or special metal having a section that will permit secure fastening to the I-beam. It may be conceived as the present rail section with the web eliminated, and the foot greatly reduced in width. It need not weigh for the heaviest service more than 50 pounds per yard. Its office will be to guide the wheels, and to take the wear of wheel flange and tread. Its light section will permit it to be properly worked in manufacture, and its special quality will make it very durable. When worn out it may be renewed without disturbing any other part of the track structure, and at relatively small expense. The foundation of such a track structure will be below the ordinary frost line, and its stability and permanent character will largely prevent the track, when once in place, from shifting in line or surface. Track heaving by frost and the usual shimming should be entirely avoided. But adjustment will occasionally be necessary and the problem of how such adjustment may be made when required will occur to the trackman as a very difficult one. Powerful track jacks, taking hold under the concrete beam, would raise the structure without serious difficulty, and slotted anchor bolt holes in the flange of the I-beam or its foot plate would permit of lateral adjustment. There would necessarily be many details to work out before the system reached a high degree of excellence, but these details ought not to be very difficult, and certainly not impossible. They need not be taken up here.
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> Such a track structure should be superior to that now in use in many particulars. When once properly put in place it should be as permanent as the steel and concrete of which it is made, and, excluding the rail proper, we might reasonably expect a life of twenty-five or thirty years. The durability of the rail would be a function of the tonnage, and when worn out, new rails could be substituted with great facility and economy, and the waste of metal in the wornout rail would be comparatively small. The advantages of continuous support would be secured, and the track when once put in perfect line and surface should remain so with little adjustment or repair for a long time. The cost of track repairs should, therefore, be greatly reduced under even the heaviest tonnage. Other merits and demerits which will readily occur need not be here discussed.
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> Taking up lastly the cost of construction—the consideration which the railroad will usually place first—a rough estimate at present prices indicates that the cost would be large—so large as to make it prohibitory now. It would probably be in the neighborhood of $25,000 per mile of single track. Of course, the present day railroad man will exclaim, "Preposterous! The project is not worth a moment's consideration!" Certainly it is not worth a moment's consideration at this time. Even if it might be shown to be more economical in the long run than our present system, it might not be possible to secure the capital required for its installation. The value of its considera-

tion now lies wholly in showing how chimerical it is at the present time to discuss systems of permanent track construction designed to take the place of our present cross-tie system. The construction here outlined is not ideally too good, and it is very doubtful if any system of permanent track construction that will be good enough can be devised that will cost much less than the figures stated.

"We can not agree with our contemporary that the project which it sets forth is 'not worth a moment's consideration at this time.' On the contrary, we happen to be aware that a well-known civil engineer, very closely connected with a leading railway company, has recently made detailed plans for some such track construction as our contemporary proposes. It is well understood that for the heaviest class of traffic the heaviest track of the present type leaves much to be desired..

"Apparently, our contemporary is frightened at its own estimate of cost; but we are of the opinion that its estimate is far too large. For our own design of half a dozen years ago the estimate of cost per mile exclusive of the rails was about $6,000. This did not include the rolled channels between the rail and the concrete; but if these weighed 150 pounds per yard, their cost at 1¼ cents per pound would be only $3,300 per mile.

"Our contemporary has in mind apparently a heavier type of substructure than that which we proposed, but it is not at all clear that such an excess of material is needed. The office of the concrete beam under the rail is to distribute the wheel load to the earth of the subgrade, and it is an easy matter with concrete longitudinals to reduce the maximum load on this earth to not more than 2,000 to 3,000 pounds per square foot, which is far below the pressures imposed by the wooden cross-tie system.

"As our readers are aware, concrete longitudinals as supports for electric railway rails laid in paved streets are now generally admitted to be far superior to the wooden cross-tie system. If any precedent is needed for the use of such a system on steam railways, this should certainly afford good assurance of success.

"Let us turn next to the proposal to use what is practically a compound rail as a superstructure on the concrete support. It will certainly be conceded that the proposal deserves careful consideration. If a rail can be made with the head or wearing surface separate from the body, so as to diminish the amount of metal necessarily scrapped when rails are renewed, a great saving would result. This, however, is substantially the same argument that has been used for the many compound rails which have been invented, none of which have ever attained commercial success. That the change from perishable wooden cross-ties to permanent concrete longitudinals as a support may make possible the success of a compound rail will, of course, be conceded; but the difficulties in the way are certainly very great.

"On the other hand, it is easy to see that the change to a longitudinal support might bring about radical changes in the present standard rail sections. For example, with cross-tie supports the most important requisite in a rail is stiffness. The rail is a girder bridging the space from tie to tie. The late A. M. Wellington used to point out that the stiffness of rails increased as the square of the weight per yard, and strongly urged the use of heavy rails to make a stiff and unyielding track.

"With wooden longitudinals there is still need of stiffness in the rail on account of the great compressibility of wood; but if we support the rail on a continuous concrete girder which is practically unyielding and far stiffer than the deepest girder rail ever rolled, there is no longer necessity for designing the rail as a girder. What we then want in a rail is a head to take the wear and a base wide enough to transmit the load to the concrete without exceeding safe stresses per unit of bearing area. Of course, the necessity of so designing a rail that a strong and durable joint can be made must be borne in mind, and the necessity of securing tie-bars to the rail and of fastening it immovably to the concrete is to be considered. We are not attempting here to design a rail section to fit these requirements, but to point out that the track of the future may very possibly rely on concrete rather than steel for longitudinal stiffness, and need not necessarily require the very large amount of metal and the great expense for construction assumed by our contemporary."

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The Double-Deck Subway System.

The following interesting article on the engineering and other difficulties encountered, and the double-deck tunnel system proposed by Mr. J. W. Reno, for New

York City, with the object of overcoming them, was contributed to The Railway Critic by Mr. William J. Ellinson, from which it, together with the illustration, is reproduced:

"The physical obstructions met with in working under the street surfaces in a city of magnitude are many. This fact, together with the necessity for not impeding traffic during underground operations, makes it requisite to call into play every fine feature of the engineer's art in planning and constructing all underground works. At this time there is an active discussion regarding the best and most complete rapid transit route and system necessary for the handling of the immense traffic masses in New York and other cities. The principal existing limitations and difficulties encountered are: (1) Feasibility from an engineering standpoint; (2) nonencroachment upon private property; (3) choice of routes and public convenience; and (4) financial aspect and compliance with the Legislature.

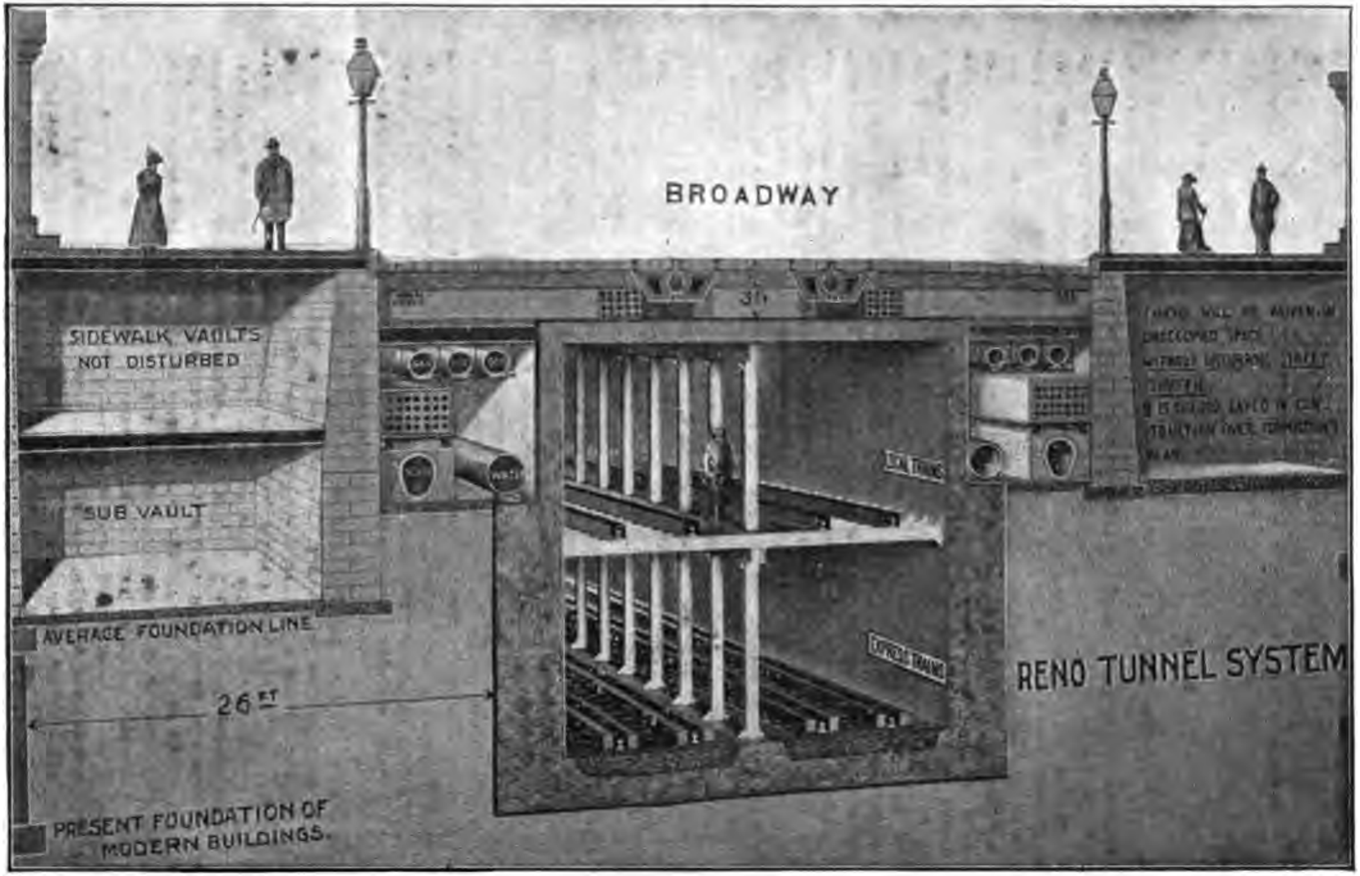
"Numerous plans fulfilling requirements and overcoming difficulties have been proposed from time to time. The double-decked tunnel system, shown in the drawing, proposed by Mr. J. W. Reno for New York City, has the approval of many skilled engineers, and is intrinsically attractive because it obviates the necessity of concessions from the owners of abutting property, in no way interferes with street or business traffic, and provides commodious pipe galleries for subsurface conduits. Under this system, the construction is varied to suit the traffic and physical conditions encountered at different places along the route.

"The proposed method of constructing the tunnel is as follows: A trench four feet in width is first excavated between two rows of sheet piling on one side of the street at a time and for one block in length. This trench is then filled with concrete to form the wall of the tunnel. Simultaneous with this operation the pipe gallery is excavated and lined, during which time the pipes and subways are supported from the surface by rods and turn-buckles. As most of these subsurface structures are within but a few feet of their future permanent position in the gallery, many of them, especially the electric subways, can be moved bodily, without injuring them in any way and causing interruption of service. The roof of the pipe galleries is then built and the street surface restored. These operations do not interfere with street car traffic in the center nor the vehicle traffic at the other side of the street, where no excavations are being made. In order to economize space, the wall between the tunnel and pipe gallery is made of I beam columns, with concrete filling between them.

"The roof of the tunnel is constructed as follows: During the night the street paving over an area of about 28 feet square is excavated to a depth of four feet; the seven steel beams which constitute the roof support over this area are then laid side by side in the longitudinal space between the cable or electric road tracks, while the yokes, which are a part of the conduit, are temporarily supported. The beams are then swung around into a transverse position under the cable road structure, with their ends supported by the I-beam columns composing the upper tunnel wall, and then shifted into their final position under the cable road yokes. The concrete roof arches are then constructed between them, the whole covered with asphaltum and the street surface restored. The tunnel walls, pipe galleries and tunnel roof being completed, the core of ground in the interior is removed by trainloads to the end of the tunnel, where it can be disposed of without the additional expense and confusion of carting it through the streets.

"Simultaneously with the removal of the tunnel core, the lines of the central columns and transverse beams, carrying the local tracks, are erected. This is followed by the laying of the invert or floor of the tunnel, and finally the express tracks, which will mark the completion of the work. Where bedrock is encountered, the method of procedure above outlined will be followed, except that the tunnel walls are only carried down as far as the bedrock, and the rock part of the 'core' taken out by 'channeling machines,' in the manner pursued in constructing the Chicago drainage canal.

"At local stations in the double-deck subway all pipe and wire ducts are carried over and under the platforms, the waiting-rooms being located under the cross streets. At express stations it is practicable to spread the local tracks and bring the express tracks up a grade of 7½ feet, the local tracks being carried down a grade of 7½ feet to meet them, placing all four tracks on a level, with island platforms between them, giving the same facilities for transfer of passengers from the local to the express trains



CROSS-SECTION OF BROADWAY, SHOWING THE RENO TUNNEL SYSTEM AND PIPE GALLERIES

(From The Railway Critic)

as is now the case in the express stations of the present subway. Engineers appreciate the advantage of this arrangement, in that it gives to the long, heavy express trains an ascending grade as they approach the station, and a descending grade to assist in their acceleration as they leave the station."

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Handling Trains Round Curves.

Referring to the question of the safest way to handle a heavy, fast passenger train on a curvy railroad, with a heavy type modern locomotive, it is a dangerous practice when the speed of the train is 25 miles per hour and up to 50 miles per hour to allow it to enter—say 7 to 10 degree curves—without reducing the speed to a safe limit. This must be judged by the engineer in charge, and about the only way judgment of this character can be obtained is to acquire it from practical handling of the engine and train. Of course, the condition of the curve to be rounded must be considered as to whether it is flat or elevated. It has been proved that it is more dangerous to round a flat curve than one properly elevated. When freight and passenger trains use the same track it is sometimes necessary to sacrifice some of the elevation to better enable the long heavy freight train to get around it without stalling.

The question resolves itself into the safest method of getting the fast moving passenger or express train over the curvy road with one of the heavy modern locomotives and avoid a possible derailment and at the same time have the train run smoothly, giving to the passengers the satisfied feeling that there is no present danger.

The careful engineer has his mind on his work, he is familiar with every curve on his division, he has a satisfied feeling and is confident that he knows about the speed of his train, no matter whether he is running over the road day or night, every landmark is as familiar to him as the gauge cocks on the boiler. He realizes from the swaying of his engine about how fast it is safe to allow her to enter the curve. The curve may be 7, 8 or 10 degrees—it matters not, his judgment tells him how much he must reduce the speed and get around the curve in safety—this judgment has been developed by years of practice—he is approaching a curve—say, 9 degrees, at about 50 miles an hour, he feels assured that it would be criminal carelessness to allow the train to enter it at that velocity and assume the third risk in ten of coming out at the other end in safety. His better judgment—the golden fruit of experience—tells him to apply the air brake with the necessary reduction while the engine and train is yet on the tangent, thereby reducing the speed to a safe limit and just as the engine enters the point of the curve he releases his brake, and if the curve is a long one and the engine is liable to pick up the speed of the train to the danger limit again he laps the valve and as the engine and train is about to come out on the tangent he draws off 7 or 8 pounds, just enough to prevent the disagreeable side lurch that is always encountered when a train leaves a curve for a straight line. The brake is then released and the system pumped up, so as to be ready for the next kink in the line. It is not necessary to close the throttle in this transaction, nor does the up-to-date engineer do so, he allows the engine to continue using steam, as though it was his intention to go somewhere.

We have noticed that some engineers on approaching a curve (if it was sharp enough to cause him a little uneasiness as to safety in getting around it) close off the throttle and allow the train to drift into and around the curve—perhaps the fireman had just finished putting in a fire of "green" coal—the smoke settles down and works its way into the coaches among the passengers and is termed by them a nuisance that should not be tolerated. However, even though the throttle has been closed, as just mentioned, its object has not been obtained, it was the evident intention of the engineer to avoid a disagreeable side lurch. But in this he is laboring under a false impression. It should be plain to him that the speed of the train has not been sufficiently reduced to accomplish this, and in addition to the side lurch the train is badly smoked, causing perhaps annoyance to the passengers. The comfort and convenience of the passengers should always be kept in mind by the engine crew. The engineer should endeavor to keep the train running as smoothly as he can, and the fireman should be on the alert and avoid smoking the train at the necessary shutting off places. The passengers will make complimentary remarks about the smooth and clean ride they enjoyed while a passenger on your train, the road gets a reputation that is appreciated by all, and about as good a thing as any in connection with the whole affair, the employers are not grieved that they have you on the list as competent employes—your careful attention to duty—your intelligence and ability will in due course merit ample reward.

To go a little further with this subject in order to be perfectly plain, I have no hesitancy in offering the following recommendations. The writer has had the advantage of several years of experience handling a heavy modern passenger engine drawing a heavy train on a curvy road. They are, however, opinions, and opinions are similar to beliefs, they prove nothing except the honesty of those holding them and the good results accruing therefrom.

I have found it an extremely safe practice when the train was running at a high rate of speed that if the curvature was heavy and the brake applied with sufficient force while the train was yet on the tangent, to bring it to a safe rate of speed and released just as the engine was about to enter the curve, and if the curve was a long one and the speed increased to what might be considered hazardous, the brake valve brought to the lap position and allowed to remain there until the engine was about to come out onto the tangent, when a sufficient reduction would again be made to prevent a heavy side lurch, this point passed, the brake is released, the valve placed in running position and the system pumped up and made ready for the next requirement, etc. This practice was the most productive of smooth riding, the abatement of the smoke nuisance—the throttle being kept open—and reduced to a minimum the possibilities of derailment.

On the other hand, it is considered dangerous practice to allow a fast moving passenger or express train to enter a curve and not reduce the speed until the engine begins to roll and sway, when in all probability the brakes will be applied many and ofttimes very heavily, in order to have her "right herself." This practice is doubly dangerous, due to the fact that when a brake is applied heavily additional weight is thereby thrown against the rails, the engine truck-drivers and coach trucks are held more rigidly in the grasp of the tightly applied brake and are not free to adjust themselves to the curvature. The dangerous features are more highly developed in the engine than in any of the rest of the train, due to brake hangers being suspended from the engine frame, rendering them very rigid. This is a point that should always be borne in mind by the engineer.

Another important point to be kept in mind by the engineer is whether his engine is provided with a rigid trailing truck or a radial swing truck. The former wears lateral motion in them, and when it is plentiful the engine sways from side to side, rounding a curve at a high rate of speed, and if the speed is not kept in check either the engine truck or the trailing truck is liable to be swung from the rails, and a catastrophe may be the result. In this will be found another good reason why speed should be reduced before entering the curve. It is a duty devolving upon the locomotive engineer to adopt every precaution for the safety of his engine and train, his own life and the lives of the traveling public.—Jas. Spellen, in Railway and Locomotive Engineering.

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*Relief and By-Pass Valves for Locomotives.**

Mr. A. E. Manchester (C., M. & St. P.): In opening the discussion on this subject I feel a little, as has been said by another gentleman, that I am doing it because I was asked to. I am a little in doubt as to just what thought the committee had in mind when they suggested this as a subject. My own observation and experience and practice are that we have practically two types of valves in use; one is an excess pressure valve, or sometimes termed a water valve, which is located in the cylinder heads or steam chests upon different designs of engines, and is intended to guard against an excess of steam pressure in the cylinders and steam chest and steam pipe and dry pipes, due to accumulations of water, or to excess pressure in the cylinders by the possible slipping of an eccentric, or due to the reversing of the engine with the main throttle closed.

As to how important it is thought that these excess pressure valves are on a locomotive I will say that it has generally been our practice to use them on all classes of engines. If we leave out this excess pressure valve we have got to take the entire responsibility of the rupture of the different parts due to an excess pressure, and I would not consider it wise to leave them off.

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*Topical discussion before the convention of the American Railway Master Mechanics' Association, June, 1905.—From The Daily Railway Age.

The other valve is the vacuum valve, or, as it is frequently described, the drifting valve. There is quite a variety as to details of construction, but the work to be performed by them all is about the same. The use of this particular valve has been criticised to some extent. A majority of them draw in air, it is said, which destroys the vacuum in the cylinder from the outside, and there has been some difficulty in some types of the valve in keeping it in repair, although as a general proposition I do not feel that this is a serious objection or one to be seriously considered, because there are a lot of the valves that are not hard to maintain. The objection raised against the valve is that it lets cold air into the cylinders, cools off the walls and destroys the lubrication. I do not personally agree with that proposition, as I believe a vacuum valve is a good feature on an engine. In fact, there are some types of engines which it would be a very difficult proposition to operate without them. Without the vacuum valve an engine in drifting must get the front end or other gases into the cylinder, or in the case of one or two types of the valve must swap the pressure from one end of the cylinder to the other. Several of these devices have proven to be quite delicate and hard to maintain.

My own judgment is that a properly constructed relief valve and vacuum valve are desirable, and that it will demonstrate itself on the pistons and valve stems if the valve is of proper size to do the work; if they are, you will find them running clean. If the valve is out of order and plugged you will find the pistons and valve stems running black, showing that there are gases being drawn into the cylinder. I hope what I have said is enough to start this discussion, and I will leave it at that.

Mr. C. A. Seley (C., R. I. & P.): My attention was recently called to the practice of a large Western road which was taking off the vacuum relief valve, which action was based on the recommendation of a paper read at the St. Louis Railroad Club, I think in January last. It was stated in that paper that there was no drawing back of the gases from the front end, and it was stated that the front end was open to observation. Experimenters put articles through the exhaust nozzle when the engine was running at various positions of the lever, and were unable to draw in anything—it always came out. At the same time we know that the inside of the exhaust stand becomes coated with a black substance. It certainly does not come from the cylinder, and on a road with which I was connected some years ago we tried the experiment of taking off the relief valves, with the result that the rods and valve stems got very black and coated with dirt; and it was the opinion of the mechanical department that the lubrication was affected thereby, although that is contrary to the opinion stated in the paper to which I refer, that they had gone to the extent of analyzing the deposit on the rods, and it was not soot. It is a matter which can be settled possibly by other experiments, although, as I say, it is a practice of one large system to take them off quite extensively.

Mr. W. E. Symonds: The subject of by-pass and relief valves to my mind is not entirely unlike the subject we have just passed, in that it pertains to a portion of locomotive equipment which is, in a certain sense, in an experimental stage; and as we have in recent years experienced quite a change from the old fixed custom of using the Stephenson link valve, what is called the conventional style of valve motion gear, fittings, etc., we now have various types of valve motion, particularly different types of valves, by-pass valves and relief valves; and it occurs to me that this is also an excellent subject for special committee work. As I know a number of roads have used different styles of valves that are recommended very highly, doubtless the results of their experiences, together with such experiments as might be conducted through a certain period of time, would enable the committee to arrive at certain conclusions which would be not only beneficial to all members of the association, but the record in itself would be a valuable addition to the minutes of our proceedings and a credit to any library in which our minutes find a resting place.

Mr. H. H. Vaughan (Canadian Pacific): I would like to second Mr. Symond's motion in regard to a special committee on this matter. I think the subject is quite a live one at the present time. We have cylinder head relief valves, steam chest relief valves, by-pass valves and drifting valves, and the thing is getting pretty well mixed up. I do not believe that we are the only road on which cylinder head relief valves sometimes come in screwed down solid. My opinion is that we can get along as well with a larger cylinder cock as we can with a cylinder head relief valve. Some of our engines have a drifting valve on the cylinder, and sometimes that has been taken off without any bad results. It is a piece of apparatus which costs $30 to make; we lose the tops off of them and there are other troubles, and they are a constant source of expense. They come in in all sorts of conditions on the road, and the committee should see if they can do away with them.

I can not see the need of an excess pressure valve on high pressure steam chests. Very few of our engines run with a clearance of less than 10 per cent. in the cylinder, and with 10 per cent. clearance the pressure in the steam chest can not exceed 150 pounds in any event, since the amount of steam contained in the clearance will release itself at that pressure.

As far as by-pass valves are concerned we have been very much pleased with the latest type of by-pass valve which has been applied by the American Locomotive Company. It has cost very little to keep up, but I would like to see some experiments made to find out whether it is advisable to apply that valve, with its corresponding expense and cost of maintenance. I think this would be a good subject for a committee. My personal feeling is that on the ordinary simple engine, if we use a good size cylinder cock, an inch or an inch and a quarter, and a vacuum valve on the steam chest, we have about all we need to keep going.

Mr. T. H. Curtis (L. & N.): I think the high pressure relief valve is largely a matter of ornament. If you look at the engines equipped with them you will generally find that the relief valve is full of grease and has not been used since the engine came out of the shop. In the first place, the engineer does not want it to be used, as he is afraid of it. If the relief valve is workable at a slight excess pressure it is liable to work some time when he is around it, and he is going to have it set so that it will not go off. A relief valve on the cylinder heads is never large enough to do any service. The Louisville and Nashville Railroad had equipped nearly every engine with these high pressure relief valves. They were never used. We had a large number of cylinder heads broken. We changed the cylinder cocks from three-eighths inch to three-fourths inch, and since making the change have had comparatively no more cylinder heads broken.

I think the vacuum valve is a necessity, but should be one which will fall open of its own accord, and its greatest use will be in drifting down hills, and also while the engine is in the roundhouse it will be open and allow the leakage of the throttle to escape, and not cause the engine to run into the pit or through the wall.

Mr. Wm. McIntosh (C. R. R. N. J.): I agree with Mr. Vaughan's idea in regard to there being no necessity for the relief valve. We have had some of our large engines equipped with them and found they were inoperative most of the time, and we decided that by enlarging the cylinder cocks we could dispense with them. We have done so and find much better results without the relief valves.

We have found the vacuum valve a necessity, and we have found it advisable with piston valve engines to raise the position of the vacuum valve as much as possible, in order to throw the cold air away from the heated parts when the steam is shut off.

Mr. S. W. Miller (Pennsylvania Lines): I would like to give a little experience I had in connection with the ordinary steam chest relief valve on the small consolidation engine. We have some little trouble with the valve stems breaking, and some one raised the question—I do not know who it was—as to whether they were of any value at all. I knew if we removed them from the steam chest and plugged the holes that there would be adverse reports on it. We selected five of the engines, and with the knowledge of only four men—the roundhouse foreman, the two men who did the work, and myself—we plugged the valves on the inside. They ran from about the 3d of last January until the 8th of April without any one knowing there had been any change from our standard practice, and the only way it was found out then was by an engineer stepping out on a steam chest while the engine was running to oil the engine through the relief valve, on account of his lubricator not working. After one of the men found it out everybody knew of it, of course. I had the lids lifted and made a personal examination of the inside of the steam chest and the cylinders, and there was absolutely no evidence of any excess of soot being drawn into the front end. I do not want to say that is conclusive evidence they are not of value, but it certainly points that way.

The President: Mr. Symonds, do I understand that you desire to make a motion that this subject of valves be referred to a special committee?

Mr. Symonds: Yes; I wish to make a motion to that effect—that the matter be referred to a standing committee.

The motion was duly seconded and carried.

Mr. David Brown (D., L. & W.): I am of opinion myself that the excess pressure valve could be eliminated; that is one of those matters that the air brake has thrown out. In olden times, when they used the reverse lever for braking purposes and you came on a flag, turned the engine over readily, if you didn't open the throttle—that is, provided the engine had not a pressure valve—why, you would probably throw down your two steam chest covers on the ground. I have seen that happen. I have also seen the steam pipe go on the cylinder; have to throw the cylinder away. If they opened the throttle that was overcome. But now that the brakes can be applied, and when the brakes are applied the lever must not be thrown over, that matter of the excess pressure valve can be eliminated altogether. As the gentleman over there says, there are many of them that do not lift from the time they go out of the shop until they come in again—probably take 300 pounds pressure, the most of them. It is probably necessary on a compound, if you have got on a compound, to provide for the low pressure cylinder not getting so much pressure.

Regarding the relief valve, or air valve, I had an experience something the same as Mr. Miller, but I did not do it on the quiet. I did it openly. I had it both in freight service and passenger service. I had three passenger engines equipped with it, and one of the three engineers came to me and said: "Mr. Brown, you will have to put that air valve in again." "What is the matter?" "Oh, she acts as if she was full of iron." I put them on the engines, so that if they were not satisfied they could put them in themselves, and that was done. That same engineer, after he had run the engine with air valves in again, came to me and said: "Take them out again, will you? I think that I was a little too quick in forming a decision on the matter, and I will try it again without the valve." We put the plugs in again, and those three engines ran until there were orders to put them in by other parties. I also had several freight engines running; didn't put them in the steam chest; didn't put them in at all. As Mr. Miller says, I never saw any sign of trouble from not having them in.

What started me at this was that there was a party who had a little valve that he wanted to put on top of the main valve. It screwed into the back of the valve and had a little valve to change the operation when the throttle was shut, so that it made it an unbalanced valve. I concluded that if such a simple thing as that would do it, why the other would do it.

Mr. George W. West (N. Y., O. & W.): I would like to ask Mr. Miller whether in the case he referred to it was on a division where there was considerable coasting.

Mr. S. W. Miller (Pennsylvania Lines, West): It is quite an undulating division, Mr. West. There is one grade of 58 feet to the mile—some seven miles of it—and another one where freight trains drift for about fourteen miles.

On motion the discussion was closed.

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The Traveling Engineers' Association.

The Traveling Engineers' Association will meet in thirteenth annual convention in the City of Detroit, Mich., commencing September 12, 1905, at 9.00 a. m. The convention will be held at the Cadillac Hotel, which has also been selected as headquarters. Special rates have been made to members and their families by the hotel people as follows: American Plan—Rooms without bath, $3, $3.50 and $4 per day, each person; rooms with bath, $4, $4.50 and $5, to $10, per day, each person. European Plan—Rates, $2 to $6 per day, each person.

Mr. W. O. Thompson, Secretary, in a circular letter, calls attention to the fact that the Michigan State Fair will be held at Detroit during the same week, and in order for the members to assure themselves of accommodations it will be necessary for them to engage rooms in advance. He also reports that the various committees who have the subjects for discussion and papers to be read at the convention have been hard at work, and that the

Committee of Arrangements is endeavoring to outdo all the others in the way of giving the members a nice time in the beautiful city of Detroit, and it is believed that the thirteenth meeting will be the most pleasant and profitable of all.

The Magazine extends greetings to the Traveling Engineers, wishing them a most pleasant and profitable convention, and trusts that much good may result from their deliberations.

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*Electric Tablet System on New Zealand Railways.**

23. *Transference of Tablets.*

(*a*) On tablet sections where a greater number of trains are run in one direction than in the other, causing the tablets to accumulate at one end of the section, the tablets must, when necessary, be transferred by the lineman from the tablet instrument at which the tablets accumulate to the instrument at the other end of the section.

Before taking out the tablets the lineman must advise the officer in charge at the other end of the section that he is about to do so by sending the prescribed signal. The number of tablets removed by the lineman must be recorded by him in the tablet register provided for that purpose, and the officer in charge must sign the entry and insert the time at which the transaction takes place; the lineman must retain in his possession all the tablets he has withdrawn until he has placed them in the instrument at the other end of the section.

(*b*) The officer in charge at the tablet station to which the tablets are transferred must, after having obtained the tablet from the engineer of the train and placed it in the instrument, immediately compare the number recorded in the lineman's register with the number of tablets received, and when he has satisfied himself that the number is correct, and that all the tablets have been deposited in the proper instrument, he must sign the register and insert the time at which the transaction takes place.

When a tablet instrument contains less than five tablets (unless the officer in charge knows that they will be balanced by return traffic), the lineman must be advised, so that the necessary transfer may be made.

24. *Recording Time When Signals Are Forwarded and Received.*

(*a*) Except when special instructions are issued to the contrary, the time at which all signals are forwarded and received must be noted legibly with a pen in the train register book, and the officer in charge on duty must place his name immediately under the last entry by him at the expiration of his hours of duty.

(*b*) If an incorrect entry be made, a line must be drawn lightly through it, so that the original entry can be clearly seen.

(*c*) In recording the time at which signals are received and forwarded, fractional parts of a minute less than half a minute must not be counted, and half minutes and fractional parts more than half a minute must be reckoned as a minute. Thus, 15¼ minutes must be entered as 15 minutes only, and 15½ minutes as 16 minutes.

25. *Ballast Trains.*

(*a*) The engineer of a ballast train that has to do work on the line must be told, when receiving the train tablet, to which end of the section it is to be taken and at what time it is to be there, in order to clear the line for the next train.

(*b*) Should the guard on the ballast train require his train to return to the tablet station in the rear instead of going through to the tablet station in advance, he must obtain the permission of the officer in charge before the train enters the section. When the train has arrived back complete and the single line is again clear, the officer in charge must restore the tablet to the instrument and give the "Canceling" signal to the tablet station in advance.

(*c*) When a ballast train has to return to the tablet station in the rear, no shunting outside the home signal at that end of the station must be allowed until a man with hand and detonating signals has been sent out to protect such shunting.

(d) When a ballast train in possession of the tablet is at work on the line, it will not be necessary to send out flagmen to protect it.

26. *Crossing Trains Out of Course.*

(*a*) If one of the trains which have to pass each other at a crossing place is late, the train which arrives first must be sent on to the next crossing station in advance, if it will be advantageous to do so. The officer in charge will be held responsible for deciding whether this shall be done or not, using his discretion according to the circumstances, and the officer in charge at the tablet station in advance must, when practicable, be informed of the course decided upon.

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*Continued from August, 1905, Magazine.

(*b*) Officers in charge must advise one another as to the running of trains, so that delays may be avoided or minimized so far as possible, and the crossing places altered with this end in view. Officers in charge will be held responsible for informing guards and engineers, when necessary, that the crossing station will be altered.

27. *Section Obstructed.*

(*a*) In the event of an engine becoming disabled between two tablet stations, the fireman must take the tablet to the station from which assistance is most likely to be obtained, and after informing the officer in charge and showing him the tablet, must personally hand it over to the engineer of the engine appointed to proceed to the assistance of the disabled engine and accompany him to the place where he left his own engine. The engineer of the disabled engine must not allow it to be removed until the assisting engine has arrived.

(*b*) The fireman of the disabled engine must not on any account allow the tablet to pass out of his possession until he hands it over to the engineer of the assisting engine, and the engineer of the assisting engine must not allow it to pass out of his possession until the disabled engine with the whole of the train (if any) is removed clear of the section, except when the line is obstructed and special arrangements are made for working in accordance with Regulation 27a.

(*c*) Should an officer in charge receive information from the fireman of a disabled train that a second train is required to enter the section to assist the disabled train, or should it be necessary for the breakdown van train to enter a section obstucted by accident or otherwise, the second train or the breakdown van train, as the case may be, may, after having been brought to a stand, and the engineer having been informed of the circumstances, be allowed to enter the section under the following arrangements, provided the engineer is in possession of the tablet:

(1) Should the assisting train or engine proceed from the tablet station in the rear of the obstruction, the officer in charge must inform the officer in charge at the tablet sation in advance of tne circumstances, and give the "Train departure" signal to the tablet station in advance, and, after it has been acknowledged, allow the second train or engine to proceed for the purpose of removing the obstruction. If the assisting train or engine is to proceed from the tablet station in advance, the officer in charge there must so advise the officer in charge at the tablet station in the rear. The officers in charge of both tablet stations must note the circumstances in their train-register books. If the disabled train is taken through to the tablet station in advance, the "Train arrival" signal must not be given until both trains have arrived, but if the disabled train returns to the tablet station in the rear, the officer in charge there must, after he has assured himself that the section is clear, replace the tablet in the instrument, and give the "Canceling" signal to the tablet station in advance.

(2) The engineer of the assisting engine must run at reduced speed, and, after removing the disabled engine and the whole of the train (if the disabled engine was working a train) to the most convenient end of the section, must then hand over the tablet to the officer in charge.

(3) The first train passing through the section after the line is again clear must be stopped, and the engineer instructed to proceed cautiously through the section.

27*a*. *Working Trains on Each Side of an Obstruction.*

(*a*) Should an accident or obstruction occur, and the traffic likely to be stopped for a considerable time, special arrangements must be made for working the trains to and from the tablet station on each side of the point of obstruction.

The tablet must be retained to work trains between the point of obstruction and the tablet station from which the tablet was issued; and, on the other side, the traffic must be conducted by a pilot guard, in accordance with the following instructions:

The guard must put the engineer in charge of the point of obstruction, and after giving him a written order instructing him not to move his engine until he returns with the pilot guard, must go himself to the end of the section to which the train was proceeding and arrange for three or more, as may be necessary, of the printed forms provided for the purpose of establishing "working by pilot guard during obstruction" (see Regulation 38 for specimen form) to be filled up. One of these must be delivered to the officer in charge of the tablet station where pilot working commences; the second must be retained by the pilot guard, and the third must be conveyed by the pilot guard with the relief train to the engineer in charge of the point of obstruction.

The pilot guard must wear a distinctive badge, which, until the regular badge can be obtained, must be a red flag tied round the left arm. So soon as he is satisfied that the arrangements are understood, trains may be allowed to go on the single lines under the control and by the permission of the pilot guard.

The engineer, when put in charge of the point of obstruction, must hand the tablet to the fireman and instruct him to take it back to the tablet station from which it was issued, to work trains between that station and the point of obstruction until the line is clear.

(*b*) The regulation badge is a red armlet with the words "Pilot guard" shown thereon in white letters.

(*c*) The line on each side of the obstruction must be protected in accordance with Rule 98 in the Book of Rules and Regulations, and the guard and fireman will be held responsible for taking care that this is done until men are specially appointed to perform the duty.

(*d*) When the line is again clear no train must be allowed to pass the point where the obstruction existed without the tablet. The pilot guard must accompany the first train carrying the tablet to the tablet station to which the train was proceeding at the time of the accident. After the engineer has given up the tablet to the officer in charge and the pilotman has withdrawn his arrangements for pilot working, the traffic must again be conducted in accordance with these regulations.

(*e*) In no case of obstruction away from a tablet station must a tablet be restored to the instrument at either end of the section until the section is clear, except as laid down in Regulation 10.

28. *Train or Portion of Train Left on Single Line.*

(*a*) When a train or portion of a train is left upon the single line from accident or inability of the engine to take the whole forward, and it becomes necessary for the engine to return to the train or rear portion of the train from the tablet station in advance, the engineer must retain possession of the tablet until the whole of the train is removed from the section.

(*b*) After sunset, or in foggy weather, or during falling snow, a red light must be placed on the front vehicle of the rear portion by the man who divided the train.

(*c*) Should an engine assisting a train in the rear fail, the engineer of the train engine must send his fireman to the engineer of the assisting engine, and obtain from him an order in writing, indorsed by the guard of the train, stating that the engineer of the assisting engine is in possession of the train tablet, and authorizing the engineer of the train engine to return from the tablet station in advance for the remainder of the train. The train engine must then proceed to the tablet station in advance, and after disposing of the front portion of the train the engineer, after informing the officer in charge what he is about to do, and showing him the written order, must return and remove the rear portion of the train and the disabled engine from the section.

(*d*) Should the assisting engine fail and the train proceed, owing to the engineer of the train engine not being aware of the failure of the assisting engine, the fireman of the assisting engine must act as directed in Regulation 27, and the disabled engine must not be moved until the relieving engine has arrived.

(*e*) If the train is assisted by a bank engine in the rear, and the train engine becomes disabled, so that it can not be moved forward, the bank engine must draw the train back to the tablet station, but the train tablet must not be delivered up to the officer in charge, but must be retained by the engineer of the bank engine, who will return to the assistance of the disabled train engine, acting in accordance with the provisions of Regulation 27.

29. *Breakdown Van Trains and Engines Replacing or Assisting Disabled Engine.*

(*a*) To prevent delays, breakdown van trains proceeding to clear the line must be signaled as express passenger trains.

(*b*) The same course must be adopted in the case of one engine proceeding to take the place of another that has failed, or of an engine, with or without a train, when sent forward to render assistance in case of failure or accident to preceding trains.

30. *Fouling Single Lines for Shunting Purposes.*

(*a*) Permission must not be given for a train to approach from the opposite end of the section when there is any obstruction on the single line outside of the home signal.

(*b*) Except as shown below, a train must not be allowed to foul the single line for shunting purposes outside the home signal applicable to a train approaching from the opposite end of the section unless the engineer is in possession of the tablet for the section so fouled.

Any engineer may proceed with his engine out onto the single line at either end of any tablet station, so far as is necessary for shunting purposes at the station, without being in possession of a tablet, when the officer in charge has given him instructions to do so, but the officer in charge must not give such instructions (*a*) when permission has been given for a train or engine to enter the other end of the section, except arrangements are first made with the officer in charge at the other end of the section and the tablet has been restored to the instrument, nor (*b*) when a tablet or blank engine key has been issued to a train which has to return to the station from which the tablet or bank engine key was issued, nor (*c*) when pilot guard working is in force.

31. *Failure of Tablet Apparatus.*

(*a*) In the event of the failure of the tablet communication between any two tablet stations, steps must at once be taken to have the difficulty put right by the lineman. If his services are not immediately available, the working of the traffic over the section must be arranged for by means of a pilot guard, in accordance with Regulation 38.

(1) The pilot guard, in the event of there being a tablet out of the instrument at his end of the section, or if one can be withdrawn from the instrument at his end, when the tablet communication fails, must take possession of such tablet, and, if there is an engine available, he may use the engine for the purpose of conveying the forms to the tablet station at the other end of the section. He must keep the tablet in his possession until the tablet apparatus is again repaired and ready for use, and on arriving at the other end of the section he must, when delivering the form to the signalman there, show him the tablet, and also show it to the engineer of every train passing over the section during the time pilot working is in operation.

(2) Should the speaking telegraph or telephone, as well as the tablet communication, have failed, and the men at each end of the section be unable to communicate with each other, the station masters or other responsible officials at both ends of the section must arrange for pilot working, and the pilot guards appointed at both ends must proceed along the railway in order that they may meet, and on doing so they must go together to the nearest or most convenient end of the section. The pilot guard who returns to the station from which he started must obtain the form which has been handed to the signalman there and return it and the other two forms in his possession to the station master or other official who filled them up, and the latter must at once cancel them by writing the word "canceled" across them. The other pilot guard must hand one of his forms to the officer in charge, as directed above, and act as pilot guard.

32. *General Instructions Regarding Electric Train Tablet Apparatus.*

Immediately on block tablet instrument failing, station masters and officers in charge are to wire to the traffic superintendent or district traffic manager, the electrical engineer, and the electrical fitter for the district, and they must as speedily as possible render a report of the interruption, which is to be made out in duplicate, one being sent to the traffic superintendent or district traffic manager and one to the electrical engineer. Officers in charge, after having wired the electrical engineer and the electrical fitter of the failure of tablet instruments, must, if these should again right themselves, advise the electrical engineer and the electrical fitter, so that his time may not be wasted in traveling to the station where the failure existed when there is really no necessity for it. An examination of the instrument will, however, be made at the first opportunity, with a view of removing the cause of the temporary failure. In order to avoid both of the stations concerned in each failure wiring the particulars, the duty of doing so will devolve upon the officer who shall first require a tablet.

The cupboards containing tablet batteries must be sealed by the electrical engineer's inspectors, and under no circumstances must the seal be broken or the battery interfered with in any way by the officer in charge, unless a leakage appears outside the battery cupboard, in which case the seal may be broken and the leaking cell removed. Notice should be sent at once to the electrical engineer's inspector for the district.

33. *Failure of Train Tablet Instruments Owing to Earth Currents.*

Occasionally train tablet instruments are affected by the passage of electricity through the earth (called "earth currents"), these currents being at times sufficiently strong to move the needles and disks of the various instruments from one position to another, and to ring the bells. When this occurs to such an extent as to make the tablet working unreliable the tablet instrument must be looked upon as having failed, and the regulations laid down for working of the trains in the event of failure of the tablet instruments must be carried out until the instruments are again in a satisfactory condition. The lineman must be at once advised, and the circumstances of the case reported to the traffic superintendent or district traffic manager.

34. *Controlling Sidings by Means of the Tablet.*

(*a*) Points giving communication between the sidings and the main line controlled by the tablet can not be opened without the tablet for that section of the line where the siding is situated, and the tablet can not be removed until the points have been placed in the proper position for trains to pass upon the main line, and securely locked so as to prevent vehicles passing from the sidings onto the main line.

(*b*) On arriving at a siding the points of which are controlled by tablet, the engineer must hand the tablet to the guard or man in charge of the siding, to enable the points to be locked. When the necessary shunting has been completed, and the points have been placed in the proper position for trains to pass upon the main lines, the guard or man in charge of the siding must return the tablet to the engineer, and the latter must proceed on his journey until he has obtained possession of it.

(*c*) Where there is an intermediate station or siding between tablet stations which requires to be worked in such a manner as to necessitate the engine working it returning with the tablet to the station at which it was obtained, and there delivering up the tablet, the following instructions must be strictly adhered to:

The train or engine requiring to pass to the station or siding and back must be signaled as "Train entering section to return to starting point." After it has returned from the siding complete and delivered up the tablet, the tablet must at once be deposited in the apparatus and the "Canceling departure," or "Line clear" signal given. These signals must all be recorded in the train register books at each end. The station at the other end of the section must be kept informed on the speaking instrument of the circumstances.

(To be continued.)

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The Andrew Ventilator for Passenger Cars.

The demand having become general for a positive ventilating system for passenger car equipment, the manufacture and sale of an improved form of the Andrew Car Ventilator has been arranged for by the Safety Car Heating and Lighting Company. It is stated that this device is giving the most satisfactory results on a number of cars to which it has been applied.

As will be seen by the illustrations, the ventilator is of the exhaust type, and is designed to be applied to a portion of the deck sash opening of the car. It is automatically reversible, operates on the principle of an ejector, and accommodates itself to the direction in which the train is moving without attention.

Fig. 1 shows the ventilator as applied to the side deck of a car, and Fig. 2 shows sectional views of the ventilator in plan and elevation. In applying to a car the screen in the deck sash opening is removed and a frame is substituted, the same being provided with glass, except that a screened opening 6 inches square is provided for the ventilator connection, permitting the ventilator to communicate directly with the interior of the car when the deck sash is open.

The operation of the ventilators is practically noiseless, their motion in reversal

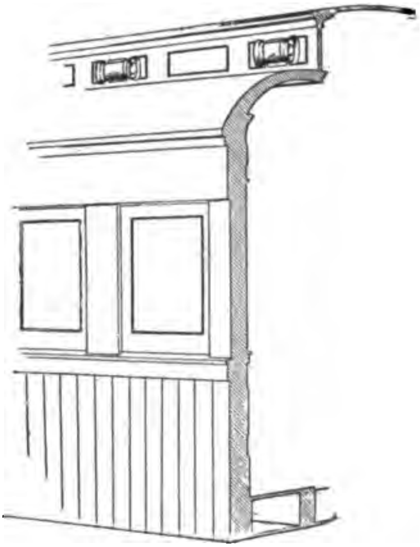

Fig. 1. Showing Ventilators Applied to Car

for changes in the direction in which the car is moving being simply a rolling friction. It is stated that a speed of less than four miles per hour is sufficient to reverse the ventilators. This device is said to be proof against transverse storms, and that rain, snow, smoke and cinders striking it longitudinally are carried through the ventilator and beyond the opening connecting with the car. It is not intended or desirable that these ventilators should be applied to all the deck sash openings of a car, it being found that for an ordinary passenger coach one over each toilet room and eight connected to the deck sash openings of the main body of the car are sufficient, while for Pullman cars one over each toilet room, two over small smoking rooms, four over large smoking rooms, two for each compartment and four for the main body of a twelve-section sleeper are sufficient.

It has been found by tests made for varying speeds that the average amount of air exhausted by each ventilator is 24 cubic feet per minute, or 1,440 cubic feet per hour, and at that rate four ventilators over a large smoking room, say 6 feet wide and 8 feet long, will completely renew the air in the room every five minutes.

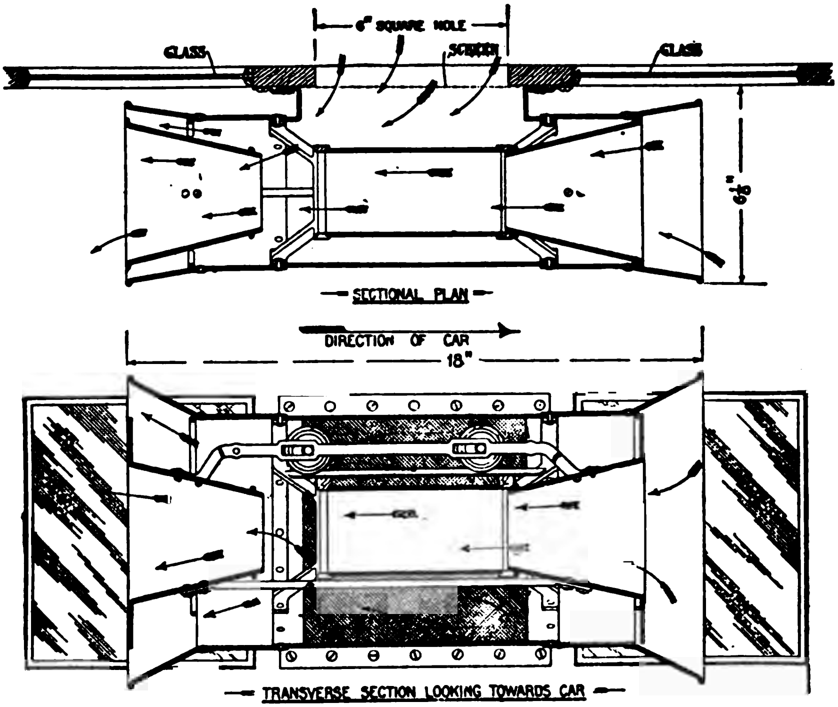

Fig. 2. Sectional Views of Ventilator in Plan and Elevation

Locomotives of Great Power.[*]

The necessity for increased adhesive weight and boiler capacity, where restrictions have existed in allowable weight per pair of driver wheels, has demanded the application of additional effective and trailing and truck wheels. This has made necessary the construction of main frames of considerable length, which have naturally been more susceptible to the severe stresses and vibrations that have been transmitted through the braking effect and irregularities in the track, as well as from the power developed in the machine itself. The extreme length of frame, even when well braced, produces a rigidity which is most undesirable, and the construction of long frames in two entirely independent sections, to provide flexibility and an opportunity for better design and construction, should relieve some of the difficulties in the way of frame loosening and breakage.

The bar type of main and front frame is almost universally used for American locomotives, but it seems advisable that a thorough investigation should be made as to the advantages and disadvantages that might result from the use of a well designed slab or double-plate frame.

The constant failures of cylinders and frames due largely to the reasons as given above have made the modern locomotive, in many instances, a very costly experiment and unfortunately radical alterations have had or will have to be made in connection with many of the present locomotives before they will be capable of giving the efficient and economical service that is expected for the investment.

Considerable knowledge on this subject has been obtained through the experiences of the past three years, and failures due to indifferent design and material, inadequate staying and bracing, concentration of excessive pressures, parts permitted to be run in bad condition, restricted release of accumulated water and gases from the cylinders, and improper operation, should be inexcusable in connection with future performances, as opportunity has been given for the development of such a combination as may be suitable for and best able to meet the various requirements.

Motion Gear.

The effective pressure on the pistons of steam engines produces the power that moves the traffic, and the design and arrangement of the motion gear is an item of importance, which has been but little improved with the increase in the capacity of the locomotive.

The essential feature of any valve gear is a degree of stiffness and absence of complication or lost motion to insure a positive movement of the valve. Motion gear as generally applied to the modern locomotive is not so designed and constructed, and with its usually complicated and heavy reciprocating parts the accumulation of lost motion is rapid and the lability for failure is great.

The Stephenson link, driven by eccentrics, has been the standard type of valve gear on locomotives almost since the inauguration of steam railroads in America, the chief reason being that it has combined simplicity in design and construction with a reasonable degree of efficiency, and the experiments made with other motion gears on the older types of locomotives have not resulted in an advantage that would warrant their general adoption. Even with the inherent faults of the Stephenson link-eccentric motion and slide and piston valves, such as irregularity of steam distribution, excessive weight of suspended and reciprocating parts, small port openings, wire drawing of steam during admission, restricted release with a consequent high back pressure and early exhaust with excessive compression, this gear has been maintained for the reasons as given, in preference to devices which would be more favorable for fuel and water economy.

Several different types of motion gear, generally combined with the Stephenson link, have been recently tested in various kinds of service, but their performance to the present date has not been such as would warrant general use. The improved steam distribution gears so far devised have been too complicated, and their general application has been out of consideration. A motion gear that produces an appreciable increase in the cost for maintenance over the type now standard can expect limited application, as the economy in the use of fuel and water would be offset by the greater cost for repairs and reduced average locomotive mileage. Even the simplicity of the Stephenson link motion has been unnecessarily abused in many instances of modern design by a combination and complication of parts, which has increased the cost for maintenance and operation and the liability of failure beyond the limits of good practice.

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[*] Abstract of a report by J. E. Muhlfeld, General Superintendent Motive Power, Baltimore and Ohio Railroad. for discussion at the Seventh Session of the International Railway Congress, held in Washington, D. C., May, 1905, and published in the Bulletin of the Congress, March 1905.—Continued from August, 1905, Magazine.

In making application of a motion gear to modern locomotives, improved steam distribution and decreased maintenance must be combined, the latter applying not only to the cost for maintaining the motion gear itself, but also to wear and tear of other parts of the locomotive which may be seriously affected by better steam distribution.

With the larger cylinders and higher pressures, the increased size of steam passages has become a necessity, and the use of the inside admission piston valves reduces friction and wear and makes possible easier handling and an arrangement of larger and shorter passages for conveying the steam between the valve chamber and the cylinders. These improvements are desirable, particularly in connection with compound locomotives, as the wire drawing of the steam becomes very detrimental at high speeds. The piston valve will also permit of reduction in cylinder clearance, and for an equal volume of clearance space it gives the advantage of a reduced surface for condensation.

A gear of the Stephenson link type, having a direct motion with inside admission piston valve and the line of thrust as nearly as practicable in the same plane, with all bearings in double shear, appeals as being a most desirable arrangement of this kind, with the advantage of reducing the number of parts between the main driver axle and the valve to the greatest possible extent and allowing the entire gear to be placed wholly between the frames.

The Stephenson gear is sometimes unjustly criticised for the early release its motion causes when working in the longer cut-offs. To secure an average back pressure during the entire stroke, a low initial back pressure is very essential, and to produce this an early and free pre-release must be given, especially for high speed.

There are now several newly-built locomotives in America which are equipped with the Walschaert motion gear. The chief difference between the Walschaert and the Stephenson motions is the constant lead with the former when the valve travel is changed and the combination of two distinct motions, one derived from a crank arm and the other from the cross head. The Walschaert gear as originally designed was not symmetrical or in a vertical plane; there was a tendency to lateral bending and unequal wear, and when compared with the eccentric driven gear it had the disadvantage of being affected by the vertical displacement of the axle. With improved design these undesirable features have been appreciably overcome, and the simplicity, accessibility and operation of the Walschaert motion will insure its receiving due consideration for the steam distribution of modern tonnage and passenger locomotives.

When comparison is made between the weight of the moving parts and the size of the bearings of the Walschaert outside gear with similar parts of the Stephenson inside gear, it will be found that a simple design of the latter weighs more than double the amount of the former and is becoming a very cumbersome and heavy suspended reciprocating and revolving arrangement. The increased complication and weight of the Stephenson gear has resulted in a distorted steam distribution, to say nothing of the destructive effect of the heavy parts and the increased cost for maintenance on account of excessive wear and breakage. The eccentrics and straps have not only to carry the increased friction of the larger sizes of valves, but the reversing twice for every revolution and the inertia of the reciprocating parts of the gear has contributed the principal load, and they have become one of the troublesome details of locomotive machinery, requiring constant inspection and maintenance attention to prevent liability for heating or failure. Furthermore, the inaccessibility of the entire arrangement, due to its location within the frames, makes proper attention almost impracticable in connection with the modern locomotive dispatchment conditions.

A motion gear placed outside of the frames certainly has the advantage of accessibility and convenience for inspection, lubrication, repairs and cleaning, and the Walschaert type provides for this and gives an opportunity for better diagonal and cross bracing which is so necessary between the main frames and the frames and boilers to maintain alignment and stability and reduce frame failures.

The Walschaert gear has long been popular in France, Germany, Belgium and other foreign countries, and it is used extensively on compound and simple types of locomotives for high and low speeds. It can be made of comparatively light parts, and, having no angular advance and no lead that can be given other than by the crank arm, a valve movement can be produced that is equivalent to that given by an eccentric having angular advance.

Unless improvement can be effected in the design and application of the Stephenson motion, it will be necessary to inaugurate the use of the Walschaert, or some similar type of gear, for the modern locomotive construction in this country, to insure the best results from high pressure with a single valve having large port openings and rapid movement for admission and exhaust, delayed opening of exhaust port for longer expansion and initial expansion and effective action on crank when the angularity of the main rod and piston pressure is most favorable to produce the greatest degree of efficiency as well as economy at high and low speeds.

In connection with motion gear, it is desirable that the shortest passage practicable be provided for the steam between the main throttle valve and the steam chest, combined with a throttle valve of the balanced single disc design to insure tightness, and steam being taken from the highest portion of the dome or boiler. Such an arrangement results in better control for the movement of the locomotive and a reduction in condensation and loss of pressure. Safety pop, whistle and other valves, as well as supply pipes for boiler head mountings, should not be applied to the main steam dome but direct to the boiler, or to independent domes, so that their action will tend to produce priming, as is the case when located near the main throttle valves.

Reduction of Cylinder Clearance.

The wasteful effects of the large cylinder clearances with locomotive single expansion cylinders, when steam is used at long cut-off, makes it necessary that this cause for loss be given due consideration. While a proportionate amount of the steam which fills the clearance space is lost during the exhaust, it is not entirely wasted, but does work during expansion in the same proportion as the expansive action of the steam which is admitted behind the piston. The reduction of this clearance space by shortening the travel of the steam from the valve to the ends of the cylinder through the use of a long piston valve and a steam chest located close to the cylinder is practicable, and cylinder clearances have been provided as low as 2½ per cent., while in some of the more unfavorable existing types of simple cylinder locomotives the clearance averages from 5 to 10 per cent. As the Walschaert motion gear provides for a constant leat, and as large spaces are not necessary to accommodate the results of excessive compression, its use should be favorable for reduction of cylinder clearance.

Compounding.

A successful compound locomotive must have an efficiency in power and control equal to that of the single expansion engine, without liability for increased cost for repairs, and it must produce a saving in fuel and water which will be the result of the compound principle. Only with the compound system can the higher working pressure be utilized to the best advantage and produce the greatest uniform and reserve power per unit of total locomotive weight or boiler capacity without a proportionate increase in the fuel or water consumption.

The cross compound system has the advantage of independent cylinders; distinct valve gear; simplicity in design and construction; accessibility of parts; desirable receiver capacity; combined automatic and independent control for the employment of single expansion; uniformity of crank movement; increased boiler efficiency, and ability for the more prompt starting of heavy trains by utilizing a greater percentage of the weight on the driver wheels for tractive power. The duplex unbalanced and four cylinder balanced compound locomotives, as has been demonstrated by recent tests in the United States, have advantages in the distribution of the stresses over four instead of two points, making provision for good bearing surfaces for all parts of the machinery and reduced liability for wear and failure. The self-contained balancing of the reciprocating parts, which dispenses with the necessity for counterweights in the running gear to absorb horizontal and vertical effect, is most desirable in connection with high speed locomotives and the use of high pressure steam and good distribution with present forms of valve gear, in connection with compound cylinders and superheating, produces increased power with economy. By these systems of compounding the performance of the Walschaert motion gear, abroad and in the United States, has developed that the steam distribution at various speeds and cut-offs is uniform and effective and that the entire arrangement is simple and easily maintained.

When the delivered cost for a well-prepared good quality of fuel is low and the feed water with respect to incrustation, corrosion and foaming and weather and gradient conditions favorable, the single expansion type of locomotives are the most economical, providing sufficient steaming capacity can be obtained from the permissable weight of the locomotive. When the cost for even an inferior grade of fuel is high and the source of supply necessitates haulage with traffic and against grade, with water and fuel conditions unfavorable and with gradient conditions favorable, the cross, duplex, of four cylinder balanced type of compound locomotives will give the most efficient and economical results.

Utilization of High Pressure Steam.

The tendency of the present period being to produce the maximum hauling capacity per unit of power, one of the simplest means to effect this has been the increasing of steam pressures to provide for the greatest tractive effort when locomotives are started at slow speeds. Furthermore, the higher the working pressure, the greater the opportunity for economy in generating power, although in American locomotives the securing of the greatest hauling capacity has generally been given the precedence to economy in fuel and water consumption. The utilization of the higher steam pressures to the best advantage has been greatly interfered with, due to the lack of positive and correct action of motion gear; improper amount of valve travel, outside or inside lap, exhaust clearance or adjustment of lead; nonsteam tight slide or piston valves and cylinder packing; priming; method for lubrication; weight, quality of material and workmanship of frictional parts; inadequate provision for drifting and neglect in details of design and to properly fit up and maintain all parts embraced to conform to the original or revised construction.

The maintenance of the correct adjustment of the valves to give efficient steam distribution has been neglected beyond reasonable limits and the outside and inside lap has often been reduced regardless of the results to the boilers and machinery, in the effort to increase the pulling capacity and enable the more prompt starting of heavy trains. The utilization of the higher working pressures has therefore not been productive of the efficiency and economy tnat is practicable, and a further legitimate development of pressure, combined with superheating and compounding, can be depended upon to give more satisfactory results in connection with locomotives of great power.

Running Gear.

Few changes have been made in the running gear of locomotives except to provide for such a design and capacity as can be best adapted for equalizing the suspended weight over as many of the truck and driver wheels as may be practicable. With the wide fire-box boilers, frame arrangement and increased number of driver and truck wheels, various devices have been resorted to for continuous equalization, and in many instances a most desirable combination has been produced for the maintenance, either of the gear itself, or of the driver boxes, packing cellars and other portions of the locomotive which require periodical running inspection and attention.

The more extensive use of the outside journal bearings for trailer, pony, engine and tender truck axles is to be recommended. The increased spread between the points of suspension over the axles, due to the outside bearing, produces greater steadiness in movement at high speed and around curves and the entire design gives greater accessibility for inspection, lubrication and maintenance and reduced liability for heating.

The necessity for cutting away portions of the main frame by slotting for the admission of equalizer gear and spring rigging, has often resulted in frame breakage and such practices are being replaced by a design of gear which maintains the full section of the frame throughout. The use of elliptic springs for the driver wheel gear is almost universal, although, in some instances, auxiliary helical springs are introduced to take up additional shock and further relieve the frames of vibration and impact.

With the necessity for faster schedules for passenger and freight trains, there is a tendency to follow out the more desirable practice of increasing the diameter of the driver wheels and the length of stroke, combined with reduced diameter of cylinder, in preference to the smaller diameter of driver wheels, shorter stroke and larger diameter of cylinder. This will result in better meeting the speed requirements, with less liability for wear and tear on the track and locomotive, and a decreased operating cost due to less number of revolutions per coupled wheel per mile. Through the increasing of the length of stroke, in preference to larger diameter of cylinder, there will also be a material gain in reduced cylinder and frame stresses.

While a few years ago 45,000 pounds per axle was regarded by locomotive builders as a safe limit, which should not be exceeded, it is now quite common to find from 50,000 to 58,000 pounds per axle being used, which has increased the intensities of wheel pressures about twice those of twenty-five years ago. With the increased speed and wheel pressures, tires are now showing a more rapid rate of wear and there have been numerous failures on account of shelling out, worn flat spots and crushing. The fact that the material used in the smaller diameter of tire does not receive the same amount of work and treatment in the manufacture as the larger tire may partly account for the greater proportionate number of small tire failures, and this in itself, makes it desirable to go to the use of the larger driver wheel diameter, when severe service conditions make the cost for turning and renewing of tires an expensive item of maintenance.

The more general use of large diameter driver wheels with cast steel centers has resulted in the tendency for a larger proportion of shrinkage for tires applied to such wheels than that which the longer experience with smaller diameters and cast iron centers had established as a standard. On account of the spokes of large diameters of cast steel centers being too small in cross section, due to the change from the hollow cast iron to the solid cast steel spoke, there is a resulting deformation of the wheel center and a springing and permanent setting of the spokes, which causes a loosening of the tire that can not be overcome by any increase in the shrinkage allowance, so long as the proportions of the spokes and rims of the wheel centers are not improved. The tendency has been to lighten entirely too much by reducing the number and size of spokes and the width of the bearing surface between the tire and the rim of the center, which with the reduction in and the solid run section between the spokes with the dishing of the center to provide for increased length of journal, has resulted in more trouble in the retaining of both thick and thin tires on cast steel wheel centers than was the case with the use of the cast iron.

On railroads where severe braking power is required to control the movement of trains down long grades, the increased and continuous brake shoe action will create a high temperature at the tread of the wheels, and this must be considered in adopting a shrinkage allowance for the securing of both large and small tires as well as the application of substantial retaining rings.

The rapid accumulation of end play to driver and truck wheels under heavy locomotives, has also been a constant expense and annoyance. Increasing the diameter of the hub and box bearing face should be resorted to to reduce this wear, and in this connection the use of wrought or cast iron liners to maintain hub face gauge should be practiced in preference to babbit metal, brass or some of the other softer metals.

For locomotive and tender trucks, use is made of both steel tired and cast iron wheels, and as in conection with fifty ton capacity freight equipment cars, the cast iron wheels have given considerable trouble, due to broken flanges and rims, and the bursting of the plates, particularly in mountain service where the grade, curvature and braking action is severe and continuous. Of the three classes of failures, the broken rims due to the overhang and contact with frog and crossing rails have been in the majority; second come the flange failures as the heating effect due to friction between the flange of the wheel and the rail has developed seams at the throat of the flange which have gradually increased, extending from one-fourth to one-half the circumference of the wheel or more in length and penetrating to the depth of the chill. This weakness with the constant impact through the continued flange and rail action, results in breakage which is generally accompanied by considerable damage. When the heavier capacity of equipment demanded a wheel capable of withstanding an additional 40 to 70 per cent. of the load it formerly carried, the design of the cast iron wheel was not materially changed, with the exception of adding weight distributed to. those parts which would necessitate the least change in equipment for manufacture, and which parts were the tread, plates, hubs and brackets. While it has been thought that an increase of about 20 per cent. in the weight of the old design of cast iron wheel, would be sufficient to withstand an increase of 66 per cent. in its loaded rating, the result of the last two or three years' service has demonstrated that it has been decidedly unsatisfactory and expensive under severe service conditions.

This development has necessitated action, and experiments are now being conducted with designs of wheels different from those of the generally recommended practice to determine whether a cast iron wheel can be produced that will better meet the requirements. It is thought by some that a design providing for a location of the plates to insure more uniform expansion, an increased number of brackets joining the rim tangentially and reinforcing the metal under the flange, greater depth of metal opposite the throat and a slight coning of the tread, will produce results.

The fact that seams at the throat of the flange have been produced by heat effect in wheels to which no brake shoes were applied, is evidence that when flange wear is prevented, a factor for the development of these seams will be eliminated, and it has also been determined that an arrangement and location of the plates and brackets, to provide greater flexibility, will prevent, in a large measure, the cracking and bursting of brackets and plates due to continuous and severe brake shoe action.

A cast iron wheel that can embrace the features referred to and at the same time prevent breaking at the rim and cracking of the tread, give an increased chilling effect at the rail contact where the greatest wearing capacity is desired, and a reduced chilling effect at the base of the flange and at the rim, where the least wear and greatest strength of metal is required to take care of the brake shoe and rail action, will produce a combination capable of overcoming some of the present difficulties, without making use of the more expensive steel tired wheels.

Apart from the design of the wheel, the type of the truck, spring gear, center plate and side bearings, plays a very important part. The truck should be flexible and swinging, to take up gradually the lateral shock transmitted when striking curvature, and the spring rigging should be so equalized, and the center plates and side bearings so adjusted that there will be no undue strain on any one wheel, causing excessive wear or impact on flanges. It is too often the case that sufficient thought is not given to the spring gear, this part being made up last and placed in the only remaining available space, so that a proper design for the work to be accomplished can not be produced.

The heavy reciprocating and revolving parts in connection with the running gear of modern locomotives still continue in vogue and there remains room for much improvement in the design and distribution of the metal for these parts, which can materially reduce weight and have a sufficient factor of safety to insure against failure. Breakages of rods on account of defective material have been largely responsible for increased weight and practical tests should give results that would be much more exact than those derived from theoretical calculations, which have not taken all factors into account. The use of high priced suitable metal should be given the preference to the lower cost unsuitable material, as lightness and strength is the combination that should be sought. The use of bushed solid end side rods prevails and for main rods the solid front and strap back ends fitted with sectional brasses are almost universal. For rod straps taper wedges and in some cases the taper strap bolts are replacing keys for adjustment purposes. All rods and straps now have the oil or grease cups forged on them.

Cross heads with adjustable and non-adjustable wearing surfaces are used; quite frequently the former, to prevent necessity for disturbing the alignment of the guides which are made of steel or forged iron, case hardened.

In the design of crank pins and axles, the outside connected construction still prevails, and will no doubt continue. Considerable difficulty has been experienced through the heating of running gear bearings for the reason that more consideration has been given to the increasing in diameter rather than of length. Crown brasses pressed into driver journal boxes, the latter fitted with removable packing cellars, stationary shoes and adjustable wedges, still continue in favor.

No radical changes have been made for the counterbalancing of the vertical or horizontal effects of the revolving or reciprocating parts, although the general increase in the diameter of driver wheels and the inauguration of the use of the balanced and duplex compound system for high and low speed locomotives, is depended upon to produce more satisfactory results.

Special Equipment.

Appliances are constantly being developed for the purpose of improving and controlling locomotive and train operation, and to reduce manual labor. Of the special equipment now in use on locomotives for this purpose, the following is the most important: Injectors; safety pop valves; water try cocks; water glass gauges; steam blowers; blow-off cocks; air brake and air signal; water brake; steam heating; boiler air brake and steam heat gauges; sight feed lubricators; steam whistles; piston and valve rod metallic packing; hand and pneumatic rail sanders and bell ringers; oil, acetylene and Pintsch gas and electric cab, train signal and head lights; vertical plane automatic couplers; tandem spring and friction draft gear and buffers; metal truck frames, body and truck bolsters and brake beams anti-frictional center plate and side bearing.; truck lateral motion devices; cylinder and steam chest relief, by-pass and excess pressure valves; steam rail cleaners, ash pan steam blowers, tractive power increasers; journal bearing grease lubricators; mechanical stokers; flexible stay bolts; automatic train pipe couplers; speed recorders; fire door openers and grate shakers.

While a number of these devices are necessities, others may be termed luxuries, and should be made use of only to that extent required by the service, as the greater the number of special appliances, the more the complication, liability for failure and maintenance cost.

Lubrication.

The use of the modern locomotive has been attended by an increased percentage of internal frictional loss, representing considerable horse power, due largely to the concentration of excessive stresses on various sliding and revolving bearings, and the application of grease for the purpose of lubrication, where a better distribution of the work, or proportion of parts, would have permitted the continuance of oil without liability for failure and relieved the excessive wear that has resulted from the use of heavier lubricants. The lower the temperature at which the bearings can be run, the less will be the frictional loss. Grank and driver journals lubricated with solid material, operate at a much higher normal temperature than those which are lubricated with liquid material and this in itself is evidence of the greater frictional loss when grease or anti-frictional solid materials are used.

With good design and fitting of bearings made from suitable materials, postive oil lubrication through means of continuous siphon feeds, trimming or wool waste packing arranged with ample and properly located oil passages, and ordinary attention and application of the lubricant at regular and required intervals, it should be practicable to maintain a normal condition of all bearing surfaces with such grades of oils and graphites as will provide for the lowest frictional losses. Grease as a lubricant has been desirable and in many cases necessary as a protection against delays due to heating of bearings of some types of locomotives that have been constructed, but the modern design should provide such a relief as will make practicable the discontinuance of its use.

Those surfaces exposed to the direct action of the steam and compressed air or gases, can be best lubricated by means of mechanical or sight feed lubricators, with such grades of oils and graphites as may be best adapted for the requirements.

Colored cotton waste is generally used where the oils feed by gravity, and wool waste or trimming where the oils are conveyed by siphoning or capilliary attraction.

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A Return to First Principles.

One of the curious features of the development of the locomotive is the fact that important questions of design often run in grooves, and have every appearance of finality for a time, when the admission is often reluctantly forced that, while a principle may appear to be correct in theory, there may be commercial and practical reasons that make its application far from the proper course to pursue. The extension front had a following that required years to overcome and bring it back to normal proportions. There are few details of a locomotive that ever went to the extremes of this one, and with less cause, and while a remarkable shrinkage is to be noted, there are few at this time to say that the return to rational lengths has been accompanied by a reduced steaming capacity, or increased fire risks.

There has not, perhaps, been any one change in the locomotive as radical as that made in the last few years in the design of the firebox, and the reasons for straying into a new form are unassailable from the theoretical consideration of a low rate of combustion per unit of grate area. Whether from lack of circulation or other causes, the wide firebox has not proved all that was expected of it, there is an unmistakable sentiment in favor of the narrow firebox. Tangible evidence of this is seen worked out on a new Pacific type engine (a type evolved to make the wide firebox possible), on a prominent Western road. This engine is built in the fullest conviction that the narrow firebox and its higher rate of combustion is the preferable construction to save flues and side sheets.

Piston valves represent a practice for which much has been claimed, and justly so, but there are many roads that do not see any advantage in their use, and one road in particular has had the cylinders changed at considerable expense in order to return to the slide valve. The reasons for this procedure are not made public, but since the road in question is not swayed by unreasonable prejudice, it is reasonable to conclude that in that instance there was a serious fault that required heroic treatment, a fault that could probably be traced to design rather than principle.

Compounding of cylinders assumed a contagious form a few years ago, even to their application in some cases to switch engines, but has now nearly run its course, there being but comparatively few now built. The compound engine had the best reasons for its existence, when it proved its ability to give a fuel economy over the simple engine, but the fact that the saving due to a lower fuel consumption has largely disappeared in the cost of maintenance of the compound gave the simple engine a renewed lease of life, as the survival of the fittest, and the application of the superheater to the latter is thought likely to fortify it in that position, which is a safe one as far as concerns the old types of compounds. What the outcome will be when pitted against the balanced compound is open to conjecture only.—The Railway and Engineering Review.

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The 1904 Air-Brake Catechism.

The twenty-second edition of this popular air-brake catechism by Mr. Clinton B. Conger is now on the market, and should meet with a large and growing sale. The author, who is so well and favorably known throughout railroad circles as to need no further introduction, in his preface says:

"In this enlarged edition of the Air-Brake Catechism considerable new matter has been added which will prove of interest not only to those who are learning about the operation of the brake equipment from their own observation and experience, but to those who have the advantage of an instruction car, with a regular instructor. This subject of self-instruction in all its details is so large that only a small part of it can be taken up in this little book, but the principal points are brought to notice.

"The construction and operation of the air pump, as far as it interests enginemen, is explained. The matter of repairs is not taken up.

"The construction and operation of the New York Air-Brake Company's equipment is explained, in addition to that of the Westinghouse Air-Brake Company.

"The Air-Brake and Signal Instructions of the Master Car Builders' and Master Mechanics' Association is the official set of instructions which every employe who has an interest in the same operation of the air brake should carefully study.

"At the present day everyone connected with the working of the air brake is expected to pass regular examinations, and these examinations are getting more strict each year. The work done by the air-brake operator in handling trains is becoming more skillful every year. He who wishes to keep up with the best practice must continually try to improve his work. This can only be done by learning and practicing the best methods.

"The list of examination questions will call attention to points in the construction and handling of the brake which you should know if you wish to pass. Bear in mind that good judgment is the first requisite for a successful air brakeman. The addition of knowledge of the construction, so as to locate defects and their remedies, and correct methods of handling, to good judgment, will make a skillful man under all conditions."

For prices and further information see the advertising pages of this Magazine.

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Japan's Great Order for Locomotives.[*]

Great as is the railway activities all along the Pacific Slope at present, they scarcely compare with those in Japan—far away in the Orient. This may indeed be regarded as most remarkable when the fact is considered that Japan has for so many months been engaged in a colossal and deadly struggle with Russia—a conflict quite enough to engross the entire attention of the former empire, as well as absorb all her financial resources and aggressive activities. Despite this mighty, destructive conflict, yet railway progress moves apace on the Imperial Government railways. As usual, American locomotive manufacturers are receiving the direct benefits of Japanese railway construction. On her last trip from Seattle, Washington, to Yokohama, Japan, the Great Northern Steamship Company's giant vessel "Minnesota" carried away fifty-seven locomotives for the Imperial Government railways. This is the first installment of engines that has been ordered.

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[*] Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

The new huge steamer "Dakota" (a sister vessel of the "Minnesota") has just arrived at San Francisco from New York with a cargo of steel rails. In a few days the "Dakota" will proceed to Seattle, where her cargo will be discharged. She will load at once for Yokohama, and among the cargo will be a second installment of locomotives. Some time ago the Baldwin Locomotive Works received an order from the Japanese Government for one hundred engines. More recently an additional order for one hundred and fifty locomotives has been received, making two hundred and fifty in all. This contract has been signed at Yokohama, according to the terms of which all locomotives must be delivered there before December 1, 1905. The last installment of the one hundred locomotives has already been shipped to Seattle, and will constitute a part of the steamship "Dakota's" Orient-bound cargo. The freight charges from Philadelphia across the continent by rail, and thence by sea to Japan, aggregate about $1,000 for each engine.

As the Japanese Government required promptly two hundred more passenger engines of the class of those first ordered at Baldwin's, they asked for bids. The order was divided, one hundred locomotives of this class being ordered from the Baldwin works, and one hundred from the North British Locomotive Company, Great Britain. The Baldwin works could have secured the entire order, but allowed part of the business to go, in order to secure another contract, including fifty consolidated freight locomotives of the American type. The one hundred and fifty engines will cost the Japanese Government about $1,500,000.

These passenger locomotives for Japan (where the gauge is three and a half feet) are small when compared with the giant locomotives used on railroads in the United States. They weigh about 102,000 pounds each, have a wheel base of twenty-nine feet, driving wheels forty-nine inches in diameter, and tanks containing 1,800 gallons of water. The fifty freight locomotives for the Japanese Government will weigh 120,000 pounds each. The largest type passenger locomotives used in the United States weigh 225,000 pounds, have a wheel base of thirty-five feet, without the tender, driving wheels eighty-four inches in diameter, and a tank capacity of 8,500 gallons.

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*The Automobile Versus the Steam Railway.**

From the Long Island Automobile Club in Brooklyn to Southampton is a distance of 89½ miles over roads which vary from excellent to passably good. On Saturday and Sunday last this club gave an "economy test" run to determine the cost for fuel and lubrication as a basis for comparing expense by automobile with the fares charged by the Long Island Railroad from Brooklyn to Southampton. The results of this test were so remarkable that we are induced to comment upon them.

In a ten horse-power gasoline machine (Franklin), driven by Dr. C. B. Parker, four persons weighing 600 pounds, with 50 pounds of baggage, the total expense for the round trip of 180 miles amounted to $3.22, which embraced the cost of 9¾ gallons of gasoline, 7 pints of oil and half an hour's time devoted to repairs of tires. This, for a single trip, equals a trifle more than 40 cents per passenger, and is to be compared with the following rates of fare which prevail upon the Long Island Railroad: Single trip, $2.72; excursion, $4.53; for fifty rides, at the rate of $1.79 per single trip.

To be sure there are no charges against the automobile to account for maintenance of way, conducting transportation, general expenses, interest, maintenance of equipment, legal expenses, advertising or depreciation. But, taking even the lowest rate offered by the Long Island Railroad, as compared with the sum placed against the automobile, we have $7.15 against $1.61, or about four and one-third times the stated cost by automobile. These are interesting and suggestive figures.

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*From The Daily Railway Age, June 21, 1905, published in honor of the annual convention of the Master Car Builders' and the American Railway Master Mechanics' Associations.

Granting that the automobile may make a single trip each day, excluding holidays, we have an apparent saving of more than $1,600 a year, and by a due regard to financial questions of economy, operation and construction, there is enough here to make it appear that the operation of an automobile today might be brought down to within competing figures with steam trains under conditions prevailing in many parts of the United States. There are certain present objections to the use of the automobile: The difficulty of heating it in winter; the interference which might be caused in winter by snow, and the comparatively low speed which it would be possible to maintain on the highway. But as against this, their greater convenience in reaching dwellings, the lower fare which they could charge, and, during good weather, the fact that many people would surrender a higher speed for the æsthetic pleasure of a more varied journey, gives automobiles an advantage in these respects which never can be shared by a steam railway or an electric line traveling upon a permanent way and with conventional stops.

Although there is no probability that automobile lines will be established upon the highways within the immediate future, such tests as that to which we refer will attract wide attention, and no one we conceive should be more interested in the mechanics or the possibilities of the automobile than the superintendent of motive power or the master mechanic. It is not for nothing that the American Locomotive Company announces its intention to build automobiles.

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*Using "19" Orders for All Trains.**

On the Franklin Division of the L. S. & M. S. (single-track line) trains are being operated by using the "19" order in all cases for both the superior and inferior trains, with perfect safety. The operator receiving the order displays the stop signal as per Rule 221-B (Standard Code), and delivers the order with a clearance card.

When an operator has orders or clearance cards to deliver to a train which it is not desired or necessary to have stop, he leaves his train order signal in the stop position, and when the train is approaching he goes out upon the track and gives the engineman a "Proceed" hand signal, using a white flag by day and a white light by night. The engineman will then approach and pass the operator at such a rate of speed as to enable him to hand on (by use of the hoop) the orders and cards to both the engineman and conductor. When delivering orders, the operator must note plainly by figure, upon the last order received, the total number of orders for delivery to the train. Conductors and enginemen use the number as a check to know that they receive all orders for them. In case the engineman or conductor should muff the orders, or if there is anything wrong with an order, they must stop the train and must not proceed until the orders have been received and understood.

We also use the middle order.

By using the "19" order for all trains, the dispatcher can handle a greater number of trains on his division and do better work than he can by using the "31" order, and I consider it can be done with perfect safety. The "19" order can be used as a hold order, the same as a "31" order, by using the X response. In handling trains by "31" order, a dispatcher will usually place the orders for a train at a watering station or some other favorable place, where trains can start without trouble, and thus a train will sometimes receive several orders at one station. It is not well for trainmen to receive too many orders at one time. Train orders should be as short as possible. Sending a long or complicated order, or putting orders in the hands of trainmen two or three hours before they are fulfilled is apt to cause misunderstanding and lead to orders being overlooked. By using the "19" order the dispatcher can place the order for the superior train one or two stations in advance of the meeting point, and deliver it without stopping the train. The order is then kept in mind by the trainman, and at the same time the train is not being delayed waiting for the conductor to walk 60 or 100 car lengths to sign orders, and you do not run the chance of enginemen breaking a knuckle or pulling out a drawbar while starting a 3,500 or 4,500-ton train.

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*A paper by T. D. Dillmin, of the Lake Shore and Michigan Southern Railway, Youngstown, Ohio, presented at the 18th Annual Convention of the Train Dispatchers' Association, at Denver, June 20.

Echoes from the Firing Line

Railroading in Egypt.

Not having received the Magazine for over a year I feel somewhat lost out here. Since leaving Mexico last September I have knocked around some. I got an appointment as inspector of drivers (traveling engineer) on the Government Railway, Gold Coast, West Africa. Of course, being a government job we kept the typewriters busy. Oh! it was great. Twenty-two engines and only four cripples in action; daily train; have known it to be on time five times in four months; passengers paid ten cents a mile and had no rights whatever. It was the worst mess I ever saw; not an oil can or tallow pot on the job; no sanders working; lubricators ditto; no cylinder cocks; wrought iron stationary grate bars; couldn't clean ashpan except over pit; grates melted every trip; it was fierce.

Well, I got oil cans; made lubricators work and started on cast-iron grates. I cleaned out a lot of old timers that seemed to own the job. The new superintendent of machinery, who had been in the United States, said "Give me American engines and American engineers. There you see a man step down off an engine in clean, good clothes and he looks like a man, not a hog, like we have here." Well, the manager was a corker; would not let any of the men answer him back; you see all the men are on a three years' contract and if you squint they fire you. I didn't have any strings on me. He got out a new time card and he asked me what I thought of it. "All wrong, from a commercial point of view." "Whew!" he says. "Do you know who you are talking to?" "Oh, that's all right," I said. "You can fire me as soon as you like. I have three months' pay in by pocket." "Well," he says, "I like a man who isn't afraid to speak out when he knows he is right."

They tried burning wood and, of course, failed, as 4-foot wood won't work in a 7-foot firebox. I got them to give me a try. They are burning wood at an expense of $3.28 as against $9.20 for coal. I took the fever bad and had to leave. The G. M. asked if I could get another man of my breed to take my place. So I returned to England and came out here. This is a new road built for military purposes. It is narrow gauge. We have Scotch engines 18x24-inch, 6 coupled; and weigh 100 tons ready for road, and take nearly all their power to move themselves. We are having no end of trouble with the injectors. They won't pick up water over 120 pounds. They are taking them off and putting on "Sellers." We take about fifteen hours making seventy-five miles with a one per cent. grade all the way; then we lay off three days. For a government job, it is the worst I ever struck.

Say, I think you fellows ought to give me the medal for carrying the B. of L. F. to the far corners of the earth. Away back in 1885 I carried the banner to Panama, working on the Panama Canal. Next I was the only B. of L. F. man on the Tehuantepec National Railway in the extreme south of Mexico. I was the first and only man to take the flag to Africa and to Egypt. I am getting gray-headed in the ranks.

MEMBER, LODGE 281.

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On the High Line Looking for a Job.

When looking for employment lately I found the following conditions existing, which I believe are detrimental to the interests of both parties concerned, i. e., the railroad and the employe, as I will illustrate: I am a fireman of over four years' experience. During that time I had two jobs of firing on one system, but on different divisions. Both jobs I resigned of my own accord and for good reasons. I received two first-class service letters, one for three years and eight months and the other for six months' service, respectively. I went over a line where I heard they needed men. I went to the master mechanic and talked with him, telling him my experience, etc., and sounding him, as it were, for a job. He was agreeable to giving me a job until he saw my service letters, which read "services satisfactory, habits and conduct good, resigned." He then became indignant, flared up and told me I had better go back where I came from for a job, and would not consider me further. Thus I found it all along the line—men needed, and when I approached either a train master or master mechanic I found there was a prospect of work from talking with either, but as soon as I showed my letters it was "all off." They sized me up as a "floater" or "boomer," although I was well dressed —too well dressed, I was told by outside parties, to hunt a job.

Now master mechanics and traveling engineers, generally speaking, are strong minded and the ones I approached figured that I would not stay. To be honest, I would not when business on the road became dull, but as long as I could make a good month's wages I would stay. However, some officials think all should stay during dull times, thereby causing them to get in debt and become dissatisfied with their jobs, and a dissatisfied employe is a poor company man and a poor man to himself. Therefore, I don't believe in starving out an extra board. This shows that it is hard to secure a job on a clear service letter.

The other feature—the student and the experienced fireman—some impractical officials in both mechanical and train departments prefer students, and why? Simply through ignorance and selfish principles. Any practical man knows and will not dispute that railroading at the present time requires experience, and a man never fully realizes the importance of his work and responsibility until he has seen the fearful results of accidents. The impractical official wants the student because he labors under the false impression that he is easy to get along with, etc., but my experience has been that the student is the first man to insist on his rights. A student on an engine causes the engineer worry and doubt—delays, waste and extra work to train crews, and extra risk of danger. Personally, I am not antagonistic to the student in any way. They make the best-hearted Brotherhood men and increase our Order in membership and finances, but as a matter of safety I would prefer railroading with men who have been "through the mill." As railroad companies pay but one class of wages, I do not understand why they pay first-class wages for second and third-class work. We all have to make beginnings, so, brothers, do not berate the student when on the road with him. The company knowingly put him there.

In asking for a clause in their schedule governing the hiring of experienced firemen, I once heard a committee give their reasons for it, explaining it fully. The general manager gave the firemen the clause and, further, issued an order over his line that none but experienced men were to be employed, unless unavailable. I hope to hear from the brothers through the Magazine as to their experiences and opinions.

MEMBER.

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Single vs. Double Doors for Wide Fireboxes.

In the July number of the Magazine I noticed an article relative to a single door for wide firebox engines. Mr. B. T. Sarver admits that when one door is used it must be larger. He says the single door is considered slightly more economical because less cold air is drawn into the flues, also that coal can be more evenly distributed over the grates. From a practical standpoint I can not agree with the gentleman, for where two doors are used less cold air will be drawn in because the opening is smaller. On the C. & N. W. we have both the single and double doors, and the men who are at the scoop will tell you that they can fire with the double door on less coal and keep more uniform steam pressure than they can with the single door, also less heat escapes with the double doors, due to the fact that there is less opening made when the door is opened.

I think the proper way to fire a wide firebox is to first fire on one side and then the other, keeping one side burning brightly all the time. In this way almost the full per cent. of heat can be obtained from the coal. With the single door the firemen are more apt to neglect this fact and fire over the whole box at each fire, while with the double door it can be fired the same as if it were two separate fireboxes. On our engines both doors swing to the right and we fire them both left handed, the same as we do the single door. I think Mr. Sarver speaks from the roundhouse point of view alone, judging from the way the firemen here feel.

MEMBER.

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Panama.

I am prompted to write this by reading a letter in the June number of the Magazine under the title of "Panama." There is no doubt in my mind but what the letter was read with great interest by all the readers of our Magazine, and this brother is beyond any doubt worthy of much credit for the valuable information he has imparted to the brothers, as well as the many other readers. It has been the subject of considerable discussion among railroad men of all classes in train service, having a very discouraging effect upon those who were contemplating placing an application with the secretary of the canal commission. The warning note which this brother has sounded is well worthy of serious consideration, but the question arises, is there no remedy for such evils?

Should such conditions continue to prevail without any efforts being made for improvement? or are the people of the United States satisfied with such a state of affairs? I will leave these questions for every true American to answer himself, but I imagine I can hear replies throughout the whole land, and the answer is "no." Who is it then that is responsible for such a state of affairs? I fancy I hear them say "Those who are in authority and have charge of the work." Then who is it that placed those parties in authority? Was it not you and I and every citizen of these United States? Unquestionably, yes. So, consequently, the responsibility rests upon ourselves, the general citizenship of the country. This great work is ours and we should look at the matter from a patriotic standpoint. But what can be done to bring about a better condition of affairs?

It must be considered that this vast undertaking is in its infancy, and due allowance should be made for errors. It must also be taken into consideration that the field of operations is far from our shores and that for this reason there are occasioned many inconveniences and many preliminary arrangements are necessary before this immense project can be successfully put forward. Some of these facts, according to my own view, have been overlooked.

All to whom I have spoken are of the same opinion as myself, that is, that the work as far as consistent should be done by American labor, and the work being in a tropical climate it would be necessary to make proper arrangements for good water, clean and healthy quarters with good sanitary regulations strictly enforced, thereby stamping out pests and contagious diseases; if necessary put up an ice plant for the purpose of having cold and pure water, good bathrooms and good substantial diet suitable for such a climate, and as previously stated, this being in a tropical climate, the working hours should be such as is consistent with the weather. Considering the risk of diseases and the hardships which such a climate imposes, employes should receive remuneration accordingly, and I regard it as a duty for this Government to set such an example. I have perfect confidence in our law-making bodies and in our chief magistrate, President Roosevelt, and I believe that when such conditions as are existing at Panama are brought clearly to the attention of the proper authorities, they will meet with the consideration which they merit. That this canal when completed will place the United States foremost of all other nations in commerce is beyond any doubt, and I feel confident that the United States with American genius and skill is the best prepared nation for the work. In conclusion I would say if the author of the letter "Panama" is still on the grounds and he should read this, please write again, for myself and many other men will always be pleased to hear from him. MEMBER.

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The Fireman.

In the July issue of the Magazine, under the head of "A Fireman's Tribulations," I called the attention of the readers to the sensible views expressed by Mr. J. A. Baker, of Railway and Locomotive Engineering, and also to the remarks by Mr. F. P. Roesch, of F. M. Hicks & Co. In this number of the Magazine I desire to call attention to the remarks made by the superintendent of machinery of a prominent southwestern railroad before a recent railway club meeting. He said in part: "Now, my experience has been that in recent years both locomotive engineers and firemen have received very material and substantial increases in pay, and that their conditions have been bettered in various ways."

We all know that there has been a little increase in pay, but what does it amount to when we look at the increased tonnage and added responsibility? Can we call it an increase where one man has to do the work that two formerly did, or where he has to fire an engine with 75 cars whereas an engine formerly pulled but 25 cars? This does not look so much like an increase to me as it does a decrease. The gentleman mentioned notes the little increase in pay but fails to also note the increased burden that has been placed on the fireman. Continuing, the gentleman said: "I fully agree with Mr. Roesch that there are many unfavorable conditions, but I think as a whole they are not quite so bad all over as were pictured, and that firemen, as a class, are today a better paid class of men in proportion to the duties they perform than any other class of railroad employes," etc.

We well know that the duties of the fireman are the most arduous as he stands behind the hot boiler head, when in parts of the country the temperature is 100 degrees in the shade. I wonder how the gentleman would like to perform those duties on a battleship in such weather, or in the winter time when there is frost and snow, and it becomes necessary for the fireman to get on top and shovel the coal down in order to take water, etc. The gentleman refers to the few who are earning from one hundred to one hundred and twenty-five dollars per month, and says it is more than the best skilled mechanic can expect to earn after completing a long period of apprenticeship and entering upon his trade. There is a great difference between the work of a mechanic and that of a locomotive fireman. The mechanic does his work in a well-fitted shop and can move about at his ease, while the fireman must work under entirely different conditions, perhaps on a hard steaming engine that is in need of the back shop, or he may be endeavoring to get steam out of dirt (real estate, as some of the boys call it in different parts of the country) instead of coal. The fireman is, too, always in the midst of danger and, I might say, the mechanic has twenty chances for his life to the fireman's one.

Again, a man may be fitted to become a good mechanic when he could not be a fireman, for the reason that he could not stand the hardships necessary to gain promotion. A mechanic may have his warm meals and lunch, regular hours to work and regular rest, while the fireman is dragging along from one sidetrack to another not knowing when he will arrive at the terminal. He is a slave to duty, and when he gets in he doesn't know how soon he may be called again.

Mr. Angus Sinclair, editor of Railway and Locomotive Engineering, at the late convention of the Railway Master Mechanics' Association, remarked that when a modern fireman is required to handle as much coal as a laborer is required to throw out of a car per day's work, it is not surprising that young men should keep away from the employment of firemen if possible. At the best, nowadays, the fireman's work is exceedingly arduous; it is work which only selected men can do.

The immense quantity of coal a fireman has to handle, and the various movements he has to make in order to get the coal in the proper place in the proper time is well outlined by that thoughtful gentleman. "Everything ought to be done to help that man so there should be no unnecessary increase of labor laid upon him," said Mr. Sinclair. "The coal should be moved ahead at water stations, but that practice is very much neglected, to say the least about it."

How different are the views of Mr. Sinclair to those expressed by the gentleman before mentioned. I thank Mr. Sinclair in behalf of the members of the B. of L. F. for his very kind and thoughtful remarks.

Member.

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A Word from New Mexico.

I have seen "a word" from several firemen, but as yet I have failed to see anything from New Mexico. Our road has the largest engines in the world. They are the Mikado type and weigh, equipped for service, two hundred and seventy tons. They are tandem compound. We also have some Vauclain compounds. This is a pretty good place to work. The coal is fairly good on the south end, but we get a good deal of Colorado soil on the north end. We work two ways out of this division point, north one hundred miles, and south one hundred and eleven miles. Going north we have the Raton mountains to climb, with three engines pulling twenty-five cars of fruit, and go like a snail on the gallop. The south end is the best to work on because we make better time, that is, overtime. On two districts we have regular engines, but on another district the engines are in the pool, and a nice set of scrap heaps they are. When going along the road on these engines a fireman has no time to look for a "hello" from the farmer's daughter, and it wouldn't do him any good if he did, because there are no farmers along the second district. They couldn't raise a disturbance because there's no rain to "settle it."

Member.

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Technical Contributions

The Air Brake, in Relation to the Harrisburg Disaster.

The double wreck and the awful results at Harrisburg, Pa., at 1.40 a. m., May 11, 1905, is of the greatest importance to railroad men, and discussion of the conditions that led to it should be pursued until the facts are understood by officials, as well as employes.

One of the worst stumbling blocks in the way of those who are intrusted with the inspection, maintenance and proper operation of air-braked trains is the body of under-officials, who know practically nothing about an air brake and don't pretend to know; there are others who are expected to know all about the matter; yet these officials direct the making up of trains, and will permit no change in the consist of a freight train that will change the "switch list," or that may cause a few minutes' delay. There is really no help to be looked for in that quarter. We must go higher up, to the officials who are concerned, not so much in the individual train movement as in the general results of operation and the net earnings.

The principal source of revenue is the long, heavy freight train. The cost of cars and locomotives is very great, and they must be handled with care to avoid injury, but the lading of a train sometimes represents a moderate fortune; yet the safety of such trains is often, almost regularly, neglected in order to hurry them out from the leaving terminal, or to hasten the setting-out or switching of cars at intermediate points.

The article contributed by H. R. Fuller to the July Magazine pretty clearly shows up the cause of the accident, and from the point of view of a general supervisor of the air brakes of a very busy railroad, I wish to give evidence to substantiate his statements.

While Congress was wrestling with the proposition to increase the percentage of operated air brakes in a freight train, all sorts of reasons were advanced as to why it should not be done. It was gravely asserted that for every additional air brake cut in there was the pro rata increase in the awful danger to which trainmen were subjected in going between cars to couple the air hose and open the valves, and other arguments were produced, equally absurd.

But why the railroads should lobby against any increase in the number of air-braked cars (equipped, in correct condition and in position) to be cut in and operated as a measure of train safety, after going to the expense of paying for the air-brake apparatus on those cars, is something that I have never been able to understand.

It is my belief that before the air brake was applied to freight cars a great many roads lost more money during many a year, as the result of trains breaking in two, separating widely and getting together again, than from all of the regular head-end and rear-end collisions in the same given time. If every car in the train has an air brake cut in, or is piped for air, the danger of damage resulting from breaking in two is practically eliminated, and the railroad officials should know that every additional air brake that is cut in reduces the chances for the trouble, denominated by the number of cars total in the train.

On a long freight train, when a portion of the cars only are air-braked, a light service application of the brakes, made when the train is running forward and the slack stretches out, will cause severe shocks to be felt on the caboose. On the road with which I am connected the damaging effect of brake application on a part-air train was realized when freight cars were first being equipped with air brakes, and part-air was all of the air that we had. It was found that, as more cars in a train were being gradually air-equipped, it was good policy to switch them together and use their brakes, in order to lessen the number of rear cars with "free slack," and to extend the numbers of the head cars with "controlled slack," until now our trains are, and have been for some time, all-air, and all working except those with such defects as necessitate cutting them out; and to refute the editorial interpretation of the Harrisburg wreck, quoted by Mr. Fuller from a daily paper, our trains of the First Division consist of as many as 75 cars, quite often, and sometimes our "battleships" haul 85 cars, with the air brakes in operation on the entire train.

As to trouble arising therefrom, there

has been none when the brakes were operated by a skillful engineer, and while shocks and occasional break-in-two's will happen under certain conditions to all immoderately long trains, the freight train performance on this road will compare favorably with any other road in the country, and be a model or good example to many.

If all cars in the train are air-equipped and operated, and if at an emergency application the quick action of the brakes is continuous throughout the train, the braking power will be exerted upon the rear cars of a train of any length before the slack of the train can close in—the slack is *controlled slack*, and there can be no serious shock.

Negligence, however, in the making up or inspection of an all-air train may leave it in a condition in which the brakes respond all right at ordinary service applications and release promptly, and yet if thrown into emergency while running forward at fair speed and the slack stretched, the action of the air brakes could "buckle up" the train as effectively as that train on the Pennsylvania was buckled. That, of course, would be the result of defective brakes, but it is the intention of this article to direct attention to the fact that simply having all cars in a train equipped with air brakes, and cutting them all in, will not prevent the shocks and damage from sudden brake application unless it is known that the triple valves will apply with quick action, when so desired, clear back to the rear of the train. When brakes are applied at emergency, if anything stops the serial quick-action of the triples, the effect is just the same practically as though it were a part-air train and the only brakes were those that applied at quick-action.

There are several impediments to quick action, and several departments are responsible for them. Cars that are simply fitted with train pipe and hose, cars that are equipped with the quick-action brake, but having their individual brakes temporarily cut out on account of some defect, and those older cars equipped with the plain automatic triple valve represent three classes that may be placed in a train among other and properly air-braked cars, without interfering with the required action of the brakes on the other cars—so long as there are not too many of these non-quick-action cars together, which stops emergency action.

The quick action at emergency application will "jump" and continue through from one to five non-quick-action cars, depending upon their location in the train. It is a common rule not to place more than two such cars together, and the responsibility for the prevention of train wrecking, in one way, is upon agents, yardmasters, switchmen, conductors, brakemen, and sometimes the train dispatcher, but directly the trainmaster.

An angle cock but partially opened will discontinue quick action beyond it, while not having any effect on service application and brake release. For this the trainmen are responsible.

The above-mentioned conditions can easily be seen and set right if understood by all parties concerned, and close attention and inspection is given, but there is a hidden source of danger—partial obstructions inside of the air pipes, and triple valves that apply at a service reduction and release all right, but will not give quick action.

Here the responsible ones are the air-brake inspectors and the train crew. Sometimes the cause is a train pipe or hose partly closed from ice; occasionally the emergency valve in the triple is stuck fast or is missing, preventing quick action on that car, but remaining undiscovered, just as are the large numbers of supposed quick-action triple valves that are not quick-acting on account of the strainers in the triple valve unions being nearly closed by the lodgment of dirt. It is this possibility of there being triple valves that fail at emergency next adjacent that should prohibit placing even two non-quick-action brakes together. They should be switched in singly.

Severe shocks at regular service applications are caused by all of the loaded cars being at one end of the train and all of the empties at the other end. Unequal piston travel has a similar effect.

So the accident at Harrisburg could have happened, and just as disastrously, if the train had been all air, but containing certain defects or irregularities.

But, on the other hand (to quote the illustrious Prof. Domehead), the air brakes can be operated satisfactorily on all the cars that the engine can haul if the train is made up right and brakes put in their proper condition, and if they are not so arranged those disasters will continue to occur, *not because of*, but *in spite of*, all-air control.

Long freight trains should be made up with the loaded and empty cars placed alternately in blocks of, say, five or seven loads, then a block of empties, of more or less number than the block of loads, according as to whether loads or empties predominated; then a block of loads and again a block of empties, etc., throughout the whole train.

Cars piped, or air-equipped, but not working quick-action triples, should be placed singly and separated by at least three quick-action brakes.

Piston travel *should not* be the same on all cars, but should range within 5½ inches on heavily loaded high capacity cars, as the shortest, and 8 inches on empty flat cars, as the longest, travel. The brackets or pipe hangers on the train pipe near the angle cocks should hold the pipe secure against vibration, which often causes angle cocks to work partly or entirely shut. Then, if the inspectors have seen to it that the triple valves are all in correct working order, or cut out and the car placed accordingly, air-brake application at either service or emergency will effect a smooth stop on a train of any length, if the engineer understands his business.

He should avoid "drifting" with the brakes partially applied on a long freight train, as much as possible, and should beware of making too light an initial reduction. It is best to wait until the proper time and then draw off at least ten pounds—noting that the black gauge hand does not rise while the train line pressure is being discharged, and the brake valve is on lap. If this does occur, reduce it down at once with the valve in the service position, while the pressure is discharging.

I have spoken only of brake application on long trains. Now a word or two about brake release: Owing to the fact that it is impossible to keep the thousands of freight car triple valves all in perfect condition in regard to the possibility of leakage past the piston packing rings, a slow increase of train-line pressure can not be depended upon to force many of the triple-valves into release position on the rear cars. Therefore, comparatively higher main pressures should be carried as the numbers increase of air-braked cars to be operated.

The pressure should be supported by volume as great as can be conveniently carried. There is a limit, however, to the amount of volume of the main reservoirs, but practically none to the amount of pressure, if the excess is pumped slowly.

In common practice the brake valve should always be used in the full release position when releasing brakes and left there without moving it until all brakes are assuredly released, after which the sooner the brake valve is returned to running position the better. A second and third movement of the brake valve to full release position should also and invariably be made afterward, and before 70 pounds train-line pressure has been attained, but never push the handle to release position when the black gauge hand shows 70 pounds.

It seems like delay to train movement to direct that whenever the air brakes on a freight train have been applied to reduce the speed, that they must not be released until the train has been stopped dead, yet in the absence of any independent means of driver brake control, a brake release while running forward generally results in the train parting.

The use of the straight-air feature of the combined automatic and straight-air driver and tender brake will permit releasing the train brakes with safety, but a common pressure retaining valve in connection with the driver brakes can not be relied upon at all times.

There is, of course, an immense power stored in the system of a long all-air freight train, and we must concede that damage can be caused if the brakes are not properly connected and skillfully handled.

Since writing the above I have read the following press dispatch in a daily paper:

"HARRISBURG, PA., July 15.—Train No. 28 on the Pennsylvania Railroad, known as the Pennsylvania Flyer, the new 18-hour train between Chicago and New York, met with an accident today a mile east of Port Royal, which fortunately did not result seriously. A westbound freight train nearing Port Royal tried to stop suddenly and the engineer made a too violent application of the air, the consequence of which was that a car buckled and was thrown over to track No. 1, on which the Flyer was speeding east. An attempt was made to flag trains in front and the rear of the wreck, but the break occurred almost simultaneously with the arrival of the Flyer, and the train plunged into the wreck. The momentum threw the wrecked car from the track, but the Flyer did not jump the rails," etc., etc.

Another case of train "buckling" from an emergency brake application. Was it a part-air train, in spite of the lesson taught on May 11, or was it practically all-air, but made up in such a condition that the quick-action effect was inactive beyond a certain point near the center or forward portion of the train?

This trouble is becoming frequent, and is one of the most serious conditions that the railroads are up against, yet a trouble that may be easily prevented.

Will W. Wood.

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What Ails the Air Pump?

The work that the air pump does in compressing air from the atmosphere to the main reservoir is measured by the amount of "free air," or air at the pressure of the atmosphere, that is taken into the air cylinder and then compressed. The reason we measure the air before it is compressed instead of after it is in the main reservoir is because the pressure, density and temperature of the atmosphere comes closer to a common standard all over the country than the pressure in the main reservoir will be. The air of the atmosphere at the level of the sea, which is a common standard all around the world, has a pressure of 14.7 pounds per square inch, and, of course, has a density corresponding to that pressure. At the top of a mountain the pressure is not so great, and the body of air is not as dense, for the air has a chance to expand some, and a cubic foot in volume will not contain as much air as at a greater pressure. For this reason a cubic foot of air taken into an air pump at high altitudes and compressed to 90 pounds gauge pressure will have a smaller volume at that high pressure than a cubic foot of free air taken into a pump at the level of the sea. It will save some trouble with figures if the full 15 pounds is taken as the pressure of the atmosphere, and we compute our pressure built up in the main reservoir by atmospheres instead of by pounds on the gauge.

Air at 90 pounds gauge pressure is said to have 7 atmospheres. This looks queer, for 15, the pressure of one atmosphere, will go into 90 exactly 6 times, and it would seem that we should call it 6 atmospheres, instead of 7. But when talking of gauge pressures we must remember that the original pressure of the atmosphere does not show on the gauge, but it shows only the pressure above the atmospheric line. A gauge such as is used on a locomotive to show pressures, that is exposed to the atmospheric pressure both inside and outside the tube, will have the hand stand at zero. It is, therefore, 1 atmosphere short at 90 pounds, and shows 6, to which we add the 1 it does not show, and we have 7 atmospheres.

To follow out the work of an air pump we will suppose that the pump is in such good shape that no air can escape past the moving piston or out past the inlet valve to the atmosphere. When the piston has moved up one-half of its travel it will have compressed the air above it into one-half the space; so that the cylinder full of free air at 1 atmosphere will have been compressed into half a cylinder full, and have twice the pressure, or 2 atmospheres, and one-half the volume. At this point the gauge will show 15 pounds, or 1 atmosphere. As the piston moves on up to three-quarters of its stroke the volume is again reduced one-half, and the pressure is doubled to four atmospheres, of which the gauge shows 45 pounds. A further movement of the piston to compress the air to half its volume again will double the pressure and give 8 atmospheres, 7 of which will show on the gauge. Now, if the gauge shows 105 pounds in the main reservoir, the air will be the same pressure in the upper part of the air cylinder; leaving out the pressure needed to raise the discharge valve off its seat, air will begin to pass into the main reservoir from the pump, and for each stroke of the piston a volume of air one-eighth as large as the cylinder would pass into the reservoir. If there was only 15 pounds gauge pressure in the main reservoir to pump against, if we leave out of account the pressure needed to raise the discharge valve, air would begin to pass away from the pump at half stroke, and we would get one-half a cylinder full of air into the reservoir at each stroke. At 45 pounds in the reservoir it would begin to pass in at three-quarters stroke, and we would get a volume of compressed air equal to one-fourth that of the cylinder. But all this time we have just one cylinder full of free air to work on, no matter to what pressure it is finally compressed, and for that reason we take the volume of free air as the standard on which to base our calculations of the work of the pump.

In all calculations of air pressures there are two standards, one that of the ordinary air gauge, which does not show the first atmosphere of pressure, and *absolute* pressure, which begins at the vacuum line, or 15 pounds below the air gauge. To reduce gauge pressure to absolute pressure add 15 pounds to what the air gauge shows.

Now, as to the volume of free air compressed by a pump on a mountain railroad and by a pump at the sea level: Suppose the pressure of the atmosphere up on the mountain was 10 pounds per square inch, which is the ordinary pressure at an altitude of 10,000 feet. This pump at half stroke would have 2 mountain atmospheres or 20 pounds absolute, which is only 5 pounds gauge pressure. At three-quarters stroke it would be 4 mountain atmospheres, or 40 pounds absolute, and 25 pounds gauge pressure; at seven-eighths stroke it would be 8 atmospheres of mountain pressure, or 80 pounds absolute, and so on up to the standard pressure carried in the main reservoir. Thus you see the pressure and amount of air finally delivered to the main reservoir by the pump depends on the pressure and density of the free air you start with, and a pump working on a mountain will handle considerable less compressed air at each stroke, and have to make a great many more strokes to fill a 50,000-cubic-inch reservoir to 90 pounds gauge pressure than if working with air of greater density at the level of the sea. And you can also see that the higher the main reservoir pressure the less volume of air is pushed into it at each stroke of the pump.

There is another factor to consider in the work of an air pump—the clearance at the end of the cylinder. A theoretically perfect air pump should have no clearance at the end of the stroke of the piston; that is, the piston should just touch the cylinder head, so that all the compressed air would have to pass out into the reservoir. But air pumps are none of them perfect in this respect. All of them have more or less clearance, and this clearance is, of course, filled with compressed air at the end of the stroke. When the piston starts back away from the head, this air will expand, and until it has expanded down to a little less than atmospheric pressure, so that the atmosphere can raise the inlet valve, no free air will come into the pump. Suppose this space is ⅛ inch, and is filled with air at 8 atmospheres, the piston will move down a full inch before the air in the clearance would be expanded down to 1 atmosphere, so free air will come in from the outside. If the air piston had 10 inches stroke, this would reduce the free air taken in by one-tenth. This loss from clearance is greater with a high main reservoir pressure than with a low, as, for instance, with 2 atmospheres, or 15 pounds gauge pressure in the reservoir, the loss would only be one-fourth inch of stroke, or one-fortieth of the full stroke.

A pump running very slowly will waste more air in the clearance than a pump running at a fairly rapid speed; first, because the momentum of the two pistons, steam and air, moving at a quick speed, will tend to carry the air piston farther into the clearance space than when it is just crawling up to the end of the stroke; and, second, because the steam ports under the reversing valve are round, and the edges of the valve that opens these ports are straight. When the reversing valve is moved very slowly by the piston it does not move its full travel, as it will open the steam port wide enough for the steam to feed through and reverse the main valve, so the steam piston does not make its full travel. Tests show that the ports make only about one-fourth of their full opening when the piston moves very slowly and reverses the valves; this shortens the stroke of the steam piston a little at slow speed and increases the clearance.

Insufficient lift of the air discharge valves, so that the air can not pass away from the cylinder to the reservoir, will give a high terminal pressure, so the air in the clearance space will follow the piston down farther than it should. This trouble is only found with newly-fitted valves, or where the valve bushings have worked up. A discharge valve with too much lift can keep out more free air than one with too little lift. It takes time for the discharge valve to move down to its seat and prevent reservoir air from getting back into the pump. The distance the air piston can move away from the head while the discharge valve is closing the opening measures the volume of reservoir air that gets back into the cylinder before the valve shuts. One-eighth of a stroke will give a chance to hold air enough to expand from 8 atmospheres to 1, and stop any free air from entering. If the valve is so loose in its bushing that it can cock to one side and does not shut tight, it is hardly possible that any free air gets into the cylinder at that end.

Leaks past the air-piston packing rings are responsible for keeping free air out of the cylinder. None of these rings are perfectly airtight, as there must be an opening in the ring to allow it to expand as it wears and fill the cylinder. As this opening becomes larger more air can pass it, till when the rings are nearly worn out, so much compressed air can get through the opening that the pump is of no use at a slow speed. Various devices have been tried to make these rings airtight, but none of them have been successful in supplanting the pattern of rings used by the air-brake companies. These rings are held out against the wall of the cylinder by the pressure of the air which gets inside the ring. This is proved by the fact that the cylinder is worn more at each end than in the middle. The air pressure can not be more than 2 atmospheres in the middle of the stroke, unless the discharge valves leak, while it is up to the reservoir pressure at the ends of the stroke, which sets out the rings very tight.

The condition of the air strainers and inlet valves have much to do with the volume of free air getting into the pump. If the strainer is stopped up with grease and dirt, so there is not opening enough to allow the air cylinder to fill to its full capacity, the pump will not pump the air it should. Keep the strainers clean and the openings full size. If a patent strainer, filled with hair when first put on, and with dirt a week afterward, is in service, better examine it and see if it is in condition to furnish air to the pump. You can easily test the pump by taking out the strainer and pumping up full pressure on the engine, and noting the time used, then putting in the strainer after draining all the reservoirs, and pump them up again. It may surprise you to find out that the pump will handle more air with the strainer removed or when it is clean. Leaky piston rod packing can waste all the air on the up-stroke if the pump is running slow. It is well worth while to see that the piston rod packing is in perfect order. Perfect doesn't mean as good as usual. A very hot pump will not handle as much free air as one that runs cool, because the air will begin to expand with the heat as soon as it gets in the cylinder, and will keep on expanding till the piston starts the other way. All that it expands before compression begins will reduce the amount of free air taken in. Air when compressed gets hot as a result of the mechanical work done on it by the steam during compression; this is a natural law, as inflexible as that of gravitation. If the air passes into and out of the pump in a large volume it will come in cool and carry the heat generated during compression away with it into the main reservoir, which should have outside surface enough to cool the air down to its original temperature. A large stream of air flowing through the pump will keep it cool. But if only a small amount of air passes to the reservoir it will carry away only a part of the heat developed during compression. This leaves the pump hot. Anything that reduces the amount of air handled by the pump at the standard speed will make it run hot.

John W. Troy.

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Questions and Answers on the Pyle National Electric Headlight

By J. Will Johnson

These questions and answers will be presented, as far as is consistent, in the order in which the articles on the Pyle-National Electric Headlight appeared in this Magazine.

Question 1.—What is an electric headlight?

Answer.—A device applied to the front of a locomotive and used to illuminate the track by means of a light produced by a current of electricity.

Q. 2.—What principal parts comprise the Pyle-National Electric Headlight?

A.—The turbine engine, the dynamo and the arc lamp.

Q. 3.—What are the duties of the turbine engine?

A.—The turbine engine furnishes the mechanical power that operates the dynamo, the latter producing the light.

Q. 4.—What are the principal parts of the dynamo?

A.—The armature, the commutator (which is attached to the armature shaft), the two field magnets and the pole pieces.

Q. 5.—What are the duties of the armature?

A.—The armature induces an electromotive force in the copper wires wound upon it, and concentrates and directs the flow of current.

Q. 6.—What is the function of the commutator?

A.—The function of the commutator is to collect the currents produced by the armature wires and cause them all to concur to a desired result.

Q. 7.—Where is the commutator attached to the armature?

A.—It is attached to the end of the armature shaft, so that it rotates therewith.

Q. 8.—How is the commutator formed?

A.—The commutator is formed of alternating sections of conducting and nonconducting material, running lengthwise upon the axis upon which it turns.

Q. 9.—What is the function of the field coils or magnets?

A.—The function of the field magnets is to produce an intense magnetic field in which the armature revolves.

Q. 10.—What are the pole pieces and their function?

A.—The pole pieces are the end portions of the field magnet and they form the armature chamber in which the armature revolves.

Q. 11.—What are the first three measurements of electricity?

A.—The volt, the ampere and the ohm.

Q. 12.—What is a volt?

A.—The volt is the practical unit of measurement of *electrical pressure.*

Q. 13.—What is an ampere?

A.—The ampere is the practical unit of measurement of the *rate of flow of current.*

Q. 14.—What is the ohm?

A.—The ohm is the unit of *electrical resistance.* Such a resistance as would limit the flow of electricity under an electro-motive force of one volt to a current of one ampere.

Q. 15.—Where is electricity found?

A.—Electricity is everywhere—it pervades all bodies.

Q. 16.—Does electricity itself represent weight?

A.—It does not. Electricity, being intangible and having no substance, can not have weight nor occupy space.

Q. 17.—How is electricity conducted into houses, or from the dynamo to the lamps?

A.—By means of copper wires.

Q. 18.—What prevents electricity from escaping?

A.—To prevent the escape of electricity the wires are covered or insulated with various substances, such, for instance, as rubber, asbestos, etc.

Q. 19.—What causes the water to flow through the pipes into our houses when we open the faucets or valves?

A.—Pounds pressure, or head.

Q. 20.—If the pounds pressure in the pipes should become too great what would result?

A.—The pipes would burst and the water escape.

Q. 21.—What causes the electricity to flow through the wires and lamps?

A.—The electro-motive force or voltage.

Q. 22.—What produces the electro-motive force, or voltage?

A.—The electro-motive force or voltage is produced in the armature wires by the armature revolving in its chamber at a very high rate of speed.

Q. 23.—What causes the electrical pressure or voltage to become too high?

A.—By increasing the speed of the armature beyond the point desired.

Q. 24.—Then the speed at which the armature revolves determines the amount of voltage produced?

A.—Yes.

Q. 25.—Should the electrical pressure become too great, what would result?

A.—If the electrical pressure or voltage becomes too high the wires conducting the current will be heated so hot that the insulation wound upon them will become charred.

Q. 26.—When the insulation on the wires becomes charred, does it lose its virtue?

A.—Yes. When the material covering the wires becomes charred it is no longer a good "insulator" and the current will leak through from layer to layer of the coils.

Q. 27.—What is this called?

A.—A burned-out coil.

Q. 28.—Does the "volt" represent any electricity?

A.—It does not. It represents only the pressure that acts upon the electricity.

Q. 29.—What effect has the volt upon a current of electricity?

A.—It forces a quantity of current to flow through the wires at a certain rate per second.

Q. 30.—How is this rate of flow measured?

A.—In amperes.

Q. 31.—How do we make a current of electricity do work for us?

A.—By placing opposition in its path.

Q. 32.—Do the wires through which the current passes offer any resistance to its flow?

A.—Yes. These solid wires offer a certain amount of resistance to the passage of electricity, just as the water pipe does to the water, and, as in the case of the water, the effect of the resistance to the passage of electricity is greater if a larger quantity is passed through than a smaller quantity.

Q. 33.—If you wish to conduct a quantity of electricity a certain distance, and for that purpose used two or more wires of the same size, or one large wire, would the resistance be less than if one small wire was used?

A.—The resistance would be very much less and the current would flow more easily.

Q. 34.—How many paths does electricity take?

A.—Electricity takes as many paths as are offered, but it always takes the easiest path, or the one offering least resistance.

Q. 35.—What is meant by a "short circuit?"

A.—A short circuit is a passage offered whereby a quantity of current of electricity may flow with less resistance than is offered by its passage to points desired, such as lamps, etc.

Q. 36.—What is the cause for most of the short circuits found in this device?

A.—Distorted insulation of wires, brought about by chafing.

Q. 37.—How may this be avoided?

A.—By properly protecting wires when an equipment is applied.

Q. 38.—How should the wires be run from the dynamo to the lamp when the dynamo is applied near the cab of the locomotive?

A.—When the dynamo is applied near the cab, the wires to the arc lamp should be run through a separate pipe and inside of a molding.

Q. 39.—Why is it not good practice to place these wires inside of the hand railing?

A.—There are several reasons. First, when there is staybolt work to be done, often the hand railing must come off and the boilermakers might not use the greatest care in removing same, and so damage the insulation on the wires, and this might not be observed until a failure had resulted. Second, there is great danger of the insulation being chafed off or the wires broken where they enter or leave the hand railing, on account of the abrupt angle at which the wires are bent. Third, water may get inside of hand railing and not drain out, and this would in time moisten and rot the insulation until the water could soak through, and when the insulation has become moist it has lost its virtue as an insulator.

Q. 40.—How should the wires be run to the arc lamp when the dynamo is applied at front or on the arch of the locomotive?

A.—When the dynamo is applied on arch of locomotive, the wires should be run through a piece of "circular loom," or a piece of rubber hose, and this conduit passed through to inside of reflector cage.

Q. 41.—How should wires be run to lamps in the cab of the locomotive?

A.—Wires to cab lamps should be run from the dynamo into the cab through an iron pipe or a piece of circular loom conduit and under a molding in the top of cab. If the iron pipe is used the wires must be thoroughly wrapped with insulation tape where they enter and leave pipe.

Q. 42.—By what name is the engine that furnishes the mechanical power that operates the dynamo known?

A.—The Pyle compound steam turbine.

Q. 43.—Explain the construction of this engine and the passage of steam through same.

A.—This engine consists of a main casting having three rows of exhaust or receiving buckets; the turbine wheel revolving in this casting has three rows of bottomless buckets or blades that are solid cast in the wheel and fit in a recess in the main casting in such a manner that the steam may pass from the blades of the wheel to exhaust buckets of casting and back into the next row of bottomless buckets in wheel, and so on until the final exhaust into a central chamber, thence to the atmosphere.

Q. 44.—Does this turbine engine require any internal lubrication?

A.—It does not.

Q. 45.—Why?

A.—This engine has no reciprocating parts, and therefore requires no internal lubrication.

Q. 46.—By what mechanical means is the speed of this device controlled?

A.—By a governor applied within the casing of the engine.

Q. 47.—What style of governor is used?

A.—A centrifugal governor.

Q. 48.—Is there any other means employed within this turbine to prevent the speed attaining a velocity beyond the point desired?

A.—Yes. There is a centrifugal brake applied to the turbine wheel and set so that it will act at about 150 revolutions higher speed than the point at which the governor is set to act.

Q. 49.—Why is this centrifugal brake not adjusted so that it will act at the same speed as the governor?

A.—There are two reasons why the centrifugal brake is not set so that it will act in conjunction with the governor: First, the brake will not act as quick as the governor weights, and would, therefore, interfere seriously with the speed at the critical time; second, it was designed and applied to prevent any possibility of the turbine wheel running away and being thrown to pieces by centrifugal force at times when the governor plungers have been neglected.

Q. 50.—How many governor weights are there in this device?

A.—Four in number.

Q. 51.—How many sets of governor springs are used and what is their duty?

A.—There are four sets of governor springs used, and their duty is to offer the proper amount of resistance to the movement of the governor weights and to cause them to act quickly.

Q. 52.—How many governor valves and where are they located?

A.—There are two governor valves, and they are placed within the governor stands.

Q. 53.—Where are the governor stands located?

A.—The two governor stands are suspended to the main casting and at diametrically opposite points.

Q. 54.—When the steam is turned on and the turbine wheel is given motion, what effect has this on the governor weights?

A.—When the turbine wheel is started in motion the governor weights, being attached thereto and revolving about the vertical axis of the shaft, tend to fly farther apart.

Q. 55.—This action of the governor weights causes what?

A.—This movement of the governor weights forces the cross arm out, which in turn moves the two governor plungers in toward their seats, thereby diminishing the volume of steam that is flowing to the turbine wheel.

Q. 56.—If the governor weights are allowed to travel out farther than at right angle position to face of the turbine wheel before the governor plungers are seated, will the governor be able to control the speed?

A.—No.

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*Water Spaces Around Fireboxes**

In endeavoring to discover what is known on this subject I made an examination of the water space dimensions of some 84 modern boilers. This investigation showed that there is no generally recognizable rule connecting the size of the water space with the firebox dimensions, but that there is an increasing tendency to use wider water spaces. So many reasons for the use of wide water spaces can be brought forward that it appears strange that the width has not been increased more rapidly. When the fireboxes were restricted in width by being placed between the wheels, the necessity of obtaining all possible grate area made it desirable to keep down the width of the water spaces to a minimum. Now, however, with the wide fireboxes above the wheels, there is but little excuse for reproducing these cramped water spaces. A free increase in the width of the water space around the firebox increases somewhat the dead weight of the engine, but the advantages to be gained will undoubtedly more than offset this.

I do not know of any experiments which will show the influence of the width of the water space on the evaporation, but it is obvious that a free circulation of the water will be insured by wide water legs and will help the evaporative power of the firebox heating surface. In addition to the size of the water spaces, their shape has considerable influence on the evaporation and life of the firebox.

As the water in contact with the sidesheets is turned into steam it must be allowed to rise to the steam space, and must be replaced by other waters. The water spaces should be so designed that this natural circulation is aided, and that the currents of steam and water impede each other as little as possible. This is secured if the firebox sidesheets are vertical or with a slight slope outward as they rise from the mud ring, so that the steam can rise along the firebox sheets and the water descend along the outside steel sheets without mutual interference.

If, on the other hand, the firebox sheets slope inward in rising from the mud ring, the steam will tend to rise from the sidesheets through the water space and along the outer sheets to the surface, thus interfering with the descending water current.

The sidesheets, being subject to the full effect of the fire, require an active supply of water to allow the vigorous evaporation to proceed properly. If the water spaces are cramped or badly arranged, so that the water supply is not kept up, the water will fail to reach large areas of the sidesheets, with results very detrimental to the life of the firebox sheets and staybolts.

In one case of this sort we found on a certain lot of locomotives that there was a well-defined oval space on each sidesheet in which it was impossible to keep the staybolts tight until the cause of the trouble was removed by redesigning the water space to give the water free access to the sidesheets.

Another advantage obtained by the widening of the water spaces is the increased flexibility and endurance of the staybolts. Some tests recently made on the Baldwin Locomotive Works vibratory staybolt testing machine show the advantage which can be expected from this source. Nine test pieces were cut from the same bar and vibrated with a deflection of three thirty-seconds of an inch each side of the center while under a load of 4,000 pounds. All conditions were the same except the length of the test piece vibrated. Three bars were 8 inches, three 6½ inches, and the remaining three were 5 inches in length. The average number of vibrations before fracture was 1,620 for the 8-inch, 960 for the 6½-inch, and 695 for the 5-inch bolts. An increase of 60 per cent. in the length of the bolt added more than 130 per cent. to its life when vibrated.

It appears that the rule for the best width of firebox water space is very much like Mr. Forney's rule for the size of a locomotive boiler, which is, make it as large as the other conditions permit. The figures obtained show a wide variation in practice. Among the wide firebox engines the narrowest water space measured as follows: Front leg, 4 inches at mud ring and 5 inches at throat; side and back legs, 3 inches at ring and 4 inches at crown. The widest space had a front leg measuring 5 inches top and bottom; side legs, 5 inches at ring and 6 inches at crown; back leg, 5 inches at ring and 7½ inches at crown.

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*Topical discussion before the convention of the American Railway Master Mechanics' Association, June, 1905, by Lawford H. Fry.

Movement of Trains

By H. A. Dalby

Doings on the High Line.

Nehemiah Buggins was an old conductor on the High Line. He said he had so much trouble to get a square meal, he was going to quit the road and go into the restaurant business at Argand so the other boys could get something good to eat. No one ever took Nehemiah for a philanthropist, and some even suspected that he had more in view than the comforts of the boys when he opened that small edition of Delmonico's on Railroad avenue, opposite the yards at Argand. It is familiarly known as "Bug House," because they had always known him as "Buggy."

He calls his place "The Semaphore," and that is what he has for a sign. They had been putting up some new three-position signals on the road and when the old ones were brought into headquarters, Nehemiah got the superintendent to get permission to sell one to him, and he had it put up in front of his door, with the ropes attached, so he could raise or lower it in the regulation way. He says he feels more at home with that red board out in front of his door, because when he was on the road a good share of his time was spent waiting for things like that to drop and let him go by. This is what he tells the dispatchers when they come in to eat. So whenever dinner is ready he lets his semaphore arm go up to danger, so the boys will know he has something for them. But the boys can not help firing a little joke into Buggy once in a while, and they tell him that his old semaphore is all right and is one of those signals that never fails, for a man is certainly running into danger if he goes by that board and attempts to eat a meal at Bug House.

But Nehemiah sets a pretty good meal, just the same, and he does not figure on getting more than two-thirds of the boys' income on pay-day, so many of them eat there, and many a profound study and animated discussion take place under the protection of that red semaphore.

But it was not to describe Bug House so much as it was to tell what was said and done there that this story is written. Dispatcher Andrews walked in one morning to get his breakfast. He had just been to the postoffice and had an open letter in his hand. As he entered he saw Trainmaster Jenkins at one of the tables.

"Just the man I want to see," exclaimed Andrews, as he went and sat down with him.

"Hello, Henry," said Jenkins. "How did things go last night?"

"Pretty rocky most of the time," replied Henry. "No. 4 is an hour and a half late from the west, and second 87 had a hot box that delayed 'em 40 minutes altogether, and Linton's extra east got hung up an hour at Ellismont waiting for 'em."

"That's too bad," replied Jenkins. "There was important freight on that extra."

Henry was interested in the letter he had just received. He was reading it again as he waited for his breakfast. When he finished he spoke to Jenkins.

"I just got a letter here from a friend of mine who is a dispatcher down on the A. B. & C. down at Laurelton. I want to read it to you. He says:

" 'DEAR HANK—I hear you fellows up there have been wading through the change of time-table business, and we got up against a proposition here a few weeks ago that was a poser for most of us, so I thought I would see what you would do with it.

" 'Our No. 7 used to run from Laurelton to Beach Hill, which is an intermediate station on the district. At the last change of time-table they made it run through to Manville, the district terminal. It leaves here at 6.30 p. m. and is due at Beach Hill at 9.50 p. m. The time is the same, and it is daily except Sunday on both time-tables, but the new one shows it running through to Manville, and due to arrive there at 11.40 p. m. The change took place at 12.30 a. m., Sunday, April 2d. No. 7 ran on Saturday, the 20th, and got to Beach Hill on time, 9.50 p. m. We had an extra leaving Manville, coming east, at 1 a. m., Sunday, and after I got him fixed up he wanted help on No. 7. I told him No. 7 had arrived at Beach Hill on time, and they were tied up and the crew gone to bed. That did not go, however, and he would not move until I gave him an order that No. 7 was annulled from Beach Hill to Manville. Now, what do you think of that? I referred the matter to the chief, and he said it was all right to give him the order, but he might just as well have come along without it. I put it to the trainmaster, and he was inclined to side with the conductor. The superintendent said it was proper for us to tell him whether No. 7 was running from Beach Hill to Manville, and he sent the question to the general superintendent. I don't know what he thought, but we were all surprised to see our question presented to the American Railway Association at its last meeting, and the Train Rules Committee of that association gave it as their opinion that No. 7 could not run west of Beach Hill after the new time-table took effect. Of course, we can not take exception to the ruling of that association, but it has caused a lot of argument among the boys here. I just wondered if you fellows had any ruling on a question of this kind. Let us hear from you. Your old friend, NED.'

"Now," said Henry, as he folded the letter and put it in his pocket, "How would our date principle apply to that case? Is there anything that would tell us whether the train could run west of Beach Hill?"

"No, there's not," replied Jenkins.

"How would you answer the question?" said Henry.

"You've got the American Railway Association's answer, haven't you?" Jenkins asked.

"Sure we have, and we couldn't go behind that. At the same time, the rule plainly states that a train on the road will take the schedule of the train of the same number on the new time-table and proceed. Now suppose No. 7 had been five hours late that night and had been just a little out of Laurelton when the new time-table took effect. It would, of course, assume the schedule of the same number on the new time-table. Now, the new time-table entirely supersedes the old, and when they get to running on the new one it shows the train running clear through to Manville."

"Well, you've got the ruling, haven't you?" repeated Jenkins. "What about that rule you were going to get up?"

"Well, I'll tell you," said Henry. "When you come to think this thing over and try to make a rule so that the train can slide from the old schedule to the new and provide for every possible case so that you will know just exactly where you are at all the time, you will find a pretty big job on your hands. Now, I figure it this way: as long as your schedules extend between the same stations the date plan ought to work all right, but when they get to changing terminals, like this case down on the A. B. & C., then you're up against it proper, for there are more possible situations of that kind than you can cover with a general rule. But such changes as these seldom happen in actual practice. It is not very often that the terminals are changed, and in order to get at a rule that everybody can understand we can afford to cut out that kind of cases entirely, and when they do occur fix it so nobody can use such a schedule until it comes into effect at its starting point on the new time-table. The best rule I can get up to use the principle of Rule 4 (B) is this:

"Each time-table, from the moment it takes effect, supersedes the preceding time-table. When a schedule of the preceding time-table corresponds in number, direction, initial and terminal stations to a schedule of the new time-table, its existence and authority, with every condition pertaining thereto, will be transferred to the schedule of the same number and date on the new time-table.

"A schedule of the new time-table which does not correspond in number, direction, initial and terminal stations to a schedule on the preceding time-table shall not be in effect on any district until its leaving time at its initial station on that district after the time-table takes effect.

"Schedules on each district date from their initial stations on such district.

"Not more than one schedule of the same number and date shall be in effect on one district.

"You see that affects only such schedules as have the same terminal stations on both time-tables and with the date as the governing feature I think that ought to regulate everything so there would be no misunderstandings. Of course the object is to keep trains moving and to give them a schedule to complete their runs if it can be done in a way that nobody will get mixed. It may be that in rare cases a train will have no schedule to get to its terminal on, but the occasional loss on this score will be more than compensated for by the fact that the use of the date will fix it so every one will understand alike."

Both men had finished eating and started toward the trainmaster's office. They went in and sat down and Henry continued: "Now, the understanding of a rule like this should be that the new schedule should take the place of the old in every particular. If the old schedule is partly fulfilled on the old time-table it will be considered as partly fulfilled on the new. If it is annulled on the old it is annulled on the new. If it has died by reason of being 12 hours late on the old the same thing applies to the new, and the schedule is dead for that day. If you get an order to run an hour late on the old you run an hour late on the new. Whatever you say about the old schedule you say about the new one when it comes into effect. Now, what do you think of it?"

Jenkins thought a moment and said, "Well, it looks pretty good, but the proof of the pudding is in the eating. Will it apply to all cases so it will be understood by all alike?"

"I have tried it with every kind of a situation I can think of and it is all right as far as I can make out," replied Henry.

"Have you consulted others about it?"

"Indeed I have. I have sent it to a number of dispatchers asking for criticisms and have not as yet heard of any cases where it would fail to govern. Let me tell you another thing. The Dispatchers' Association at its recent annual convention adopted it as their recommendation, and they sift things pretty thoroughly before they act on them."

"That may all be," replied Jenkins. "But what does that amount to? If the American Railway Association adopts it it will be time enough to think about putting it into effect."

"Yes, that's true, but the opinion of the Dispatchers' Association is worth something."

Jenkins looked at his watch and said No. 3 was about due and he wanted to go west on her and Henry picked up his hat to go.

"Let me have a copy of that rule of yours, Henry," said Jenkins. "I'll look it over when I get time. May be I can make a better one."

Henry happened to have an extra one in has pocket and handed it to Jenkins.

"I hope you can," he said. "The sooner we can find a satisfactory solution of this problem the better."

No. 3 whistled, the two parted, Jenkins turning over the proposed Rule 4 in his mind and Henry mentally composing an answer to the letter from his old friend, Ned.

Taking Down Signals at An Intermediate Station.

There are a few rules in the Standard Code that must be supplemented by good sense in order to make them effective and entirely safe. Question 175 this month points out one of such rules. Another of the same kind is Rule 96, which reads as follows:

> When signals displayed for a section are taken down at any point before that section arrives, the conductor will, if there be no other provision, arrange with the operator, or if there be no operator, with the switchtender, or in the absence of both, with a flagman left there for the purpose, to notify all opposing trains of the same or inferior class leaving such point that the section for which the signals were displayed has not arrived.

In this rule the same principle is involved in the action of the train taking down the signals as in the use of Rule 14 (k), as indicated in Question 175. Rule 96 requires only that "opposing trains of the same or inferior class" be notified of the section yet to arrive, while it is evident that it is just as necessary to notify trains which may in any way be inferior to the following section. Inasmuch as the leading section can not know every order that may be issued to the following section it would seem that as a matter of safety *all* opposing trains should be notified until the expected section arrives.

In practice it is not very often that such a case comes up, for the reason that signals are usually carried through to the district terminal or else taken down at a registering station, in which case the register gives the information. Even in this event the conductor of the train taking down the signals must consider whether any opposing trains are excused from examining the register at that point, as is sometimes the case with certain passenger trains, the operator being required to make the entry on the register and to give a "clearance" to the train as it goes by, stating that all trains that affect its rights have arrived and departed. In case anything of this kind is permitted by rule it should be taken into account by the train taking down signals, as an operator is not always to be depended upon to know what trains are affected by the movements of others. Of course these trains are of rare occurrence, but they are entirely possible and should not be overlooked.

The fact that certain situations rarely occur is a very good reason why we should make it a point to know how to act when they do occur. Unexpected situations are sometimes the cause of serious mistakes because we have never anticipated any such thing. Some little point is overlooked because we have not studied the possibilities of the case beforehand. It is well then to look into some of the possible situations arising from conditions described in Rule 96.

"If there be no other provision" for notifying opposing trains that another section is to arrive the conductor is made responsible for giving this information. The "other provision" contemplated in the rule is, without doubt, a train register, and we have pointed out that even the register may be so governed as to lead to error. If, then, there is no register at the station where the signals are taken down the conductor must arrange with the operator to notify opposing trains. When this is done, although the rule does not say so, it is generally understood that the operator should hold his train order signal against opposing trains until the section arrives. If there be no operator the next employe authorized to convey the information is the switch-tender, and if there be neither, the conductor must leave one of his own men for the purpose. These are the only three classes of employes permitted by the rule to assume this responsibility, and it would appear that to entrust it to any other would be a violation of the rule. Not even an agent (who is not an operator) nor a reliable section foreman would come within the provisions of the rule.

This is a most important matter and the question has been asked if it is sufficient for the conductor to simply tell the operator or other person verbally that he must perform this duty. This is all that is implied in the rule, unless Rule 103 be understood to apply to such cases. It provides that "Messages or orders respecting the movement of trains or the condition of track or bridges must be in writing." Our opinion is that this rule should apply to a case of this kind and that the conductor should give notice of the fact in writing.

Some roads have varied from the Standard Code in the adoption of this rule, a notable exception of which is seen on the Canadian Pacific. The rule as it appears in that code mentions but two employes, the operator and the flagman, and requires that the instructions from the conductor shall be in writing. It then states that the operator or flagman must remain on duty to carry out these instructions unless he is excused by an order from the train dispatcher, in which case the latter is made responsible. The rule on this road also specifies that the information shall be given to "all opposing trains of the same or inferior class and opposing trains of superior class affected by the signals." This imposes upon the conductor the duty of specifying such trains as are to be notified.

Another point should be borne in mind by the train taking down signals, and that is the fact that the signals should be displayed as long as the train remains at the station. If the fireman should take down the signals the moment the train arrives at the station it is not impossible that some opposing train may see it displaying no signals and be out of reach of the operator when the latter receives his information. This possibility has been anticipated by the Canadian Pacific rule and it requires that the operator or flagman be prepared to notify opposing trains *before* the signals are removed from the engine.

In a general way the execution of the rule should be accompanied by the use of good judgment on the part of all concerned and every possible precaution taken to see that no train is omitted or overlooked which can be affected by the removal of the signals.

One or two roads have made the rule entirely different from that recommended by the Standard Code and have required that the leading section wait at the point where signals are taken down until the arrival of the following section unless released by a train order, in which case the responsibility for notifying other trains is assumed by the dispatcher. This is really the surest way, although the Standard Code practice seems to provide a perfectly safe method if it is properly carried out.

On some roads the rule contains the added requirement that the train taking down signals shall notify opposing trains which it meets until it reaches a registering station, where it will register the fact that it displayed signals as far as the station in question. This, however, is only an additional safeguard, and the rules first mentioned should be considered as first and most important.

Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

308. Wear of Guide Bars.—"When an engine is running forward and working steam, what part of the guides, top or bottom, does the cross-head bear against, and why does the bottom guide wear so much faster than the top one on all road engines?"—*C. H.*

Answer.—When the engine is running forward the top guide will wear more than the bottom guide, because when the piston is at the forward end of the cylinder steam is admitted, and as the pin passes the center the steam is pushing the piston back, exerting a pressure on the forward end of the main rod. The back end of the main rod being below the center the cross-head is forced upward or against the bottom of the top guide.

When the piston leaves the back end of the cylinder the steam in the cylinder is pulling the rod forward and on an angle after the pin leaves the center. The pull on the pin lifts the cross-head and causes it to wear on the bottom of the top guide. It is always pushing and pulling on the rod, and as the back end of the rod follows the crank pin circle it is always on an angle except when passing the centers, thus holding the cross-head up while working steam running forward and pushing it down when running backward. If your engine is wearing most on the bottom guides when running ahead it is due to improper lubrication of bottom guides and cross-head, or else the guides are not in line. Road engines running ahead do not wear the bottom guides most.

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309. Indicator Cards.—"What are the four principal points of an indicator when indicating an engine?"—*W. D.*

Answer.—If you mean the four principal points of an indicator card, they are the admission, cut-off, expansion and release or exhaust. If the pencil of the indicator is held to the paper on the indicator drum when communication between the cylinder and indicator is shut off, both sides of the indicator piston are exposed to the atmosphere and a line is made on the paper that has no connection with the conditions existing in the cylinder. This forms the line from which all other pressures are determined. Now before taking the card it is well to allow the piston in the indicator to make a few strokes before applying the pencil to the paper, this to warm up the pipe leading to, and the cylinder of the indicator. Then when the pencil is applied it will indicate the admission line, which will show the pressure in the cylinder until the pencil begins to fall, or the valve has closed the port for admission of steam. This is the point of cut-off, and shows that the valve has closed the port for admission. As the steam expands in volume the pressure decreases, and the drop of the pencil, showing the drop or decrease in pressure, indicates the expansion of steam in the cylinder until the port is opened for the release or exhaust, and then the pencil falls until the cylinder piston reaches the end of its stroke, and as the piston now moves forward, if the steam did not all get out of the cylinder the piston will push it out, and the line made by the pencil will indicate the pressure on the exhaust side of the piston, which is called the back pressure, and is measured by its distance above the line first made on the card. This line continues until the valve closes the exhaust, when the line will curve upwards, showing that the steam did not all get out of the cylinder, and what failed to escape through the exhaust port was compressed in the cylinder. Therefore, we have a card showing admission, cut-off, expansion, release and compression—five important points. Any book on indicator practice with a little study will make this clear to you.

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310. Engine Traveling Under or Over.—"What is meant by an engine traveling under or over?"—*W. D.*

Answer.—The direction in which the engine runs. When you say a locomotive is running ahead or back it is readily understood that the forward or back motion eccentrics are controlling the valve, but in stationary practice you would not get a very definite idea as to which direction the engine was running corresponding to the eccentric.

Place the crank on the dead center nearest the cylinder, and when the engine starts if the pin starts downward or under the axle first the engine is running under, but if it starts in the opposite direction and goes over the axle first it runs over. When a locomotive is running ahead it is running under, and when backing up it is running over.

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311. Effect of Decreased Valve Travel.—"What is the effect on an engine if the travel of valve is decreased?"—*W. D.*

Answer.—The effect of shortening the travel of the valve is to increase the lead, both steam and exhaust, and decrease the port opening for the admission of steam to the cylinder, which produces an earlier cut-off and increases the expansion. This causes a reduction in the port opening for the exhaust steam to escape from the cylinder and increases the compression.

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312. Long and Short Connected Engines.—"What is the difference between a long or a short connected engine?"—*W. D.*

Answer.—The difference in the length of the connecting or main rods, the rods that communicate the pressure on the pistons to the crank pins of the driving wheels or the cranks on the axles.

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313. Uptake of Boiler.—"What is meant by the uptake of a boiler?"—*W. D.*

Answer.—This applies to what is known as the area, or uptake and funnel. In determining the size of funnel conditions must be considered, and this question refers to marine practice, rather than locomotive, and means the area of funnel to that of the grate and is determined by results based on best practice. The area is usually one-fifth to one-eighth that of the grate, or one-fifth to one-sixth the grate area when the top of the funnel is about forty feet above the grate.

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314. A Jet of Steam.—"What is a jet of steam?"—*W. D.*

Answer.—A volume of steam escaping through a nozzle or pipe which, while escaping, is projected through a passage funnel or opening to mix with air, gases or liquids, thereby inducing current. A blower on a locomotive is a jet of steam that induces a current of gases and air through the stack, causing a draft on the fire.

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315. Travel of Valve When Steam Lap and Port Opening is Known.—"When the steam lap and port opening is known, what must be the travel of the valve?"—*W. D.*

Answer.—If the valve is to open the steam port its full width, the travel of the valve must be twice the width of the steam port and the lap of the valve.

Example: Width of steam port, $1\frac{1}{4}$ inches; lap of valve, 1 inch. $1\frac{1}{4}+1=2\frac{1}{4}$ inches, and $2\frac{1}{4}\times 2=4\frac{1}{2}$ inches. Answer, $4\frac{1}{2}$ inches.

If the valve has over-travel—that is, if it travels over the edge of the bridge—you can take one-half the width of the bridge multiplied by 2 and add to the above. You will then have a valve travel equal to the width of the steam port plus the lap plus one-half the width of the bridge multiplied by 2 equals travel of valve.

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316. Setting Out Packing Rings.—"How should the packing rings be set out?"—*W. D.*

Answer.—If engine is equipped with spring cylinder packing remove cylinder head and follower. Use calipers, or a stick if you do not have them, to keep piston central in cylinder, loosen jam-nuts and put tension on the springs to hold packing rings out against the cylinder walls. After adjusting, caliper or measure again and know that the piston is in the center of cylinder before or when the jam-nuts are tightened. Proper adjustment depends entirely on your judgment. If the packing is set out too tight it will absorb the power of the engine and may ruin both the packing ring and the cylinder. On the other hand, the packing should be tight enough to prevent the escape of steam past the packing rings, which would result in a waste of steam and loss of power. If snap rings are used they should be turned from a ring about three-sixteenths of an inch larger than the diameter of the cylinder when applied, but if worn they may be peined out with a hammer to fit the cylinder. When applying new rings the sharp corners should be rounded off to prevent the sharp edge from cutting cylinder walls.

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317. Action of Injector.—"What makes an injector lift water?"—*W. D.*

Answer.—With a lifting injector, the injector does not really lift the water. The steam jet or primer allows the steam to flow into the overflow pipe and this forces the air out of the pipe and injector, producing a partial vacuum in the injector. This is one reason that all connections should be kept tight. When the air is forced out of the injector the atmospheric pressure on top of the water in the tank then forces the water up into the feed pipe and into the injector. This also explains why injectors will work better at sea level than on mountains or at high altitudes, where the air is light and there is less atmospheric pressure to force the water up to the injector.

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318. Broken Pony Truck Center Pin or Long Equalizer.—"In case of a broken pony truck center pin or long equalizer on any engine with a two-wheel forward truck what would you do?"—*J. R. B.*

Answer.—Aleck bolt or long truck equalizer broken, raise the front end of the engine above its normal position. This will take the tension off the front driving box spring. Now jack up the front end of equalizer and place a block of hard wood or a truck brass on top of truck axle and allow the end of the equalizer to rest on it. If kept well oiled where the brass rides the axle it will give no trouble. Should the equalizer break between the fulcrum and the end so you could not use brass on journal, jack up and place a tie or short piece of rail across top of frames in front of cylinders and chain broken equalizer to it. This will hold the front end of equalizer solid and will give the use of the front driving spring. Run carefully with an engine blocked in this manner.

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319. Working Steam Expansively.—"After getting train started, why should you hook your reverse lever towards the center?"—*J. R. B.*

Answer.—That you may work the engine with more economy. By hooking the lever toward the center the steam port will remain open during a portion of the stroke only, and when the valve closes the port the steam thus confined in the cylinder forces the piston to the completion of its stroke by its expansive force or energy. This is termed "working steam expansively," and less steam is required from the boiler to fill the cylinder at a short cut-off than when the port remains open during the full length of the stroke of the piston. If you can do the work with less steam you will use less coal.

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320. Lead of Valve.—"What is meant by the lead of a valve?"—*J. R. B.*

Answer.—The opening of the steam port when the piston is at the beginning of its stroke.

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321. Angularity of Main Rod.—"In talking about the angularity of the main rod, 'A' says it was overcome by the slip of the link. 'B' says it was overcome by the link saddle pin being set back of the center of the block. If the link saddle pin being placed back of the center overcomes it, how, and if the slip of the link does, please state whether they both have something to do with it, and if only one, which one?"—*C. R.*

Answer.—The link block is securely fastened to the bottom of the rocker arm and must move in the arc traversed by the arm. Now the action of the eccentric rods on the link forces it to move in a slightly vertical motion at certain parts of the stroke, which causes the link to slip on the link block. The slip of the link on the block is greatest in full gear and diminishes as the block is moved toward the center of the link. Back setting the link saddle pin or point of suspension also has the effect equal to lengthening the eccentric rod during a portion of the stroke, thereby equalizing the valve travel, and has more influence on the equalization of admission and cut-off and overcoming the angularity of the main rod than the slip of the link on the block. It will require a little study to understand the motion of the link at each end, as it moves in the motion of a pendulum from its point of suspension (the saddle pin), and the motion of the link on the link block. If you can trust yourself to ride on a brake beam while a careful man handles the engine for a few revolutions it will assist in making this clear to you.

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322. Position of Eccentric.—"What should be the position of the eccentric with direct motion and piston valve inside admission?"—*J. R. B.*

Answer.—With valve arm and link arm of same length, eccentrics should be set at right angles to the pin and advanced toward the pin the amount of lap and lead of the valve. The eccentrics should be in the same position as if indirect motion and outside admission valves were used.

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323. Direct or Indirect Engines.—"I wish to ask about some Erie engines that are run into our terminal. What are these engines, direct or indirect? I will describe them: The eccentrics are placed on the axle in direct position, viz., forward motion eccentrics lead the pin 90 degrees plus the angle of advance. Other eccentrics have relative position to make engine direct, but a top and bottom rocker arm is used and piston valve is situated outside of frame, and have inside admission valves. The valve stem and main piston move together almost entire stroke, thus indicating a direct engine. What are these engines, direct or indirect?"—*L. L. H.*

Answer.—You are evidently mistaken when you say that these engines have inside admission. The valve moving in the same direction as the piston from the beginning of the stroke would indicate that they are outside admission valves, and with the top and bottom rocker arm they would be indirect motion, as the valve would move in the opposite direction to that of the eccentric rod. Therefore, the eccentrics should be set at right angles to the pin and advanced toward the pin the amount of lap and lead the same as if a plain slide valve was used.

324. Crosshead Gib on Top of Single Bar Guide.—"Please explain why the gib in the crosshead on top of the single bar guide of a mogul engine is left loose, or what effect it would have if made tight in crosshead."—*J. C. McL.*

Answer.—The gib in the crosshead can be made to fit tight, providing that it will permit a free movement on the guide bar. When they are not tight it is usually due to wear. With this type of crosshead it is difficult to keep them tight, and they wear rapidly, on account of the horizontal and vertical motion of the crosshead.

325. Friction.—"What reduces friction and what is the result of excessive friction?"—*O. L.*

Answer.—Friction is the resistance that a body meets with from the surface on which it moves, and is reduced by polishing, smoothing, or lubricating the surfaces. The result of excessive friction is heat, which expands the journal and increases the pressure between the journal and its bearing, which further increases the friction and gives you trouble from hot pins, journals, and burned brasses, etc.

326. Lubrication.—"What is lubrication and its object?"—*O. L.*

Answer.—Lubrication is a method of introducing a lubricant, either liquid or solid, between the journal and its bearing, or between any two wearing surfaces, and the object is to keep the surfaces of the two metals or bearings apart by separating them with a film of lubricant, thereby reducing the amount of friction.

327. Caring for Hot Bearings on the Road.—"In what manner would you care for hot bearings on the road, and what kind of oil should be used on hot bearings?"—*O. L.*

Answer.—When a bearing gets hot, increase the oil supply, if possible, and be sure the oil reaches the bearing. If an engine truck, tender or driving journal, would examine it at first stop, if time would allow, and pack it if necessary. If driving box was hot, due to wedge being too tight, would pull wedge down. If eccentric was hot, would keep lever hooked up as near center as possible and use valve oil in the strap. If the strap was too tight on the eccentric, would loosen bolts and put in a liner at first stop. If the forward motion eccentric is heating, by having the lever well up in the quadrant a good share of the work is taken on the back motion eccentric. It is not good practice to drop the lever well forward when a forward motion eccentric is running hot, as it increases the work on the forward motion. Care and attention to the bearings will prevent a great deal of trouble due to hot bearings. This is where an ounce of prevention is worth a pound of cure. Use engine oil on all bearings, but if the bearing is very hot, valve oil should be used, and when the box is reported at the terminal to be repacked the sponging that has been saturated with valve oil should be removed and the oil holes cleaned out, especially in cold weather.

328. Duties at Completion of Trip.—"At completion of trip, what is necessary?"—*O. L.*

Answer.—A thorough inspection of the locomotive. The fire should be well burned down and sufficient water in the boiler to avoid the necessity of hostler working injector while on the pit or in the house. Look at the firebox, crownsheet and flues, then begin your inspection when you strike the ground, and examine all parts of the engine and tender, going completely around. Look for loose nuts, wedge bolts, cracked leaves in springs, defects in spring hangers and in spring rigging; note temperature of all journals and bearings, look for broken or lost cellar bolts in driving and engine truck boxes. Examine flanges of wheels, see if pilot is too low. Uncoupling levers, grab irons, etc., should receive inspection. Shut off feeds on guide cups, see that all cotter pins are in place, and figure that the inspector or any one else can not find any defect that you have not located. Then write a report of the necessary work, so that the roundhouse men can readily locate and make needed repairs.

329. Successful Lubrication.—"What examination should be made by the engineer to insure successful lubrication, and how should feeders of oil cups be adjusted?"—*O. L.*

Answer.—To successfully lubricate bearings on a locomotive, all the examination necessary is to see that the oil holes are opened and a sufficient amount of oil is given the bearing, just enough to properly lubricate them and prevent cutting. The sponging in the driving box cellars, tender truck boxes and engine truck cellars should be saturated with oil and have enough elasticity to remain in contact with the journals. The top of the driving and engine truck boxes should be packed with a good quality of cotton waste, well saturated with oil, and this packing should not be disturbed except when absolutely necessary, and in case of its removal from the top of the boxes, care should be exercised to prevent the dirt from entering the oil holes and getting on the bearing. It is advisable to have the ends of the packing or sponging turned down at the edge of the cellars in driving and engine truck boxes, to prevent the waste from working in between the journal and the brass, fórming what is known as "waste grabs." Keep the packing from becoming glazed or hardened in the cellars and there should be no trouble. Driving and engine truck cellars are often packed as shown in Fig. 1 and give very satisfactory results. Tender truck boxes are run most successfully when packed as shown in Fig. 2. The loose ring of saturated waste *A* is put at the back end of the box, and serves to keep the dust or dirt out of the oil. The sponging *B* should be placed between the ring first applied and the collar of the journal, but should never extend

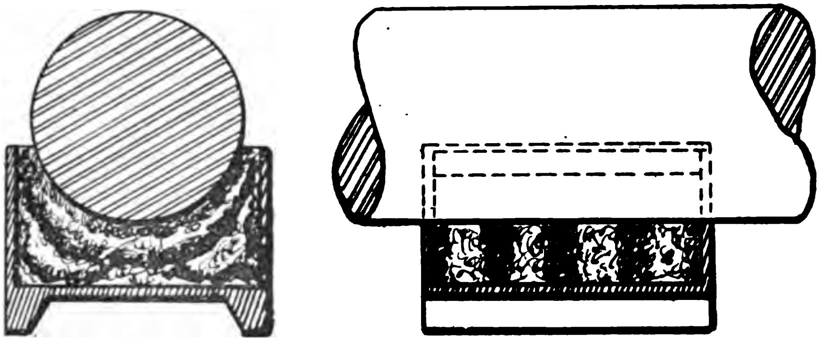

Fig. 1. Showing Method of Packing Driving and Engine Truck Cellars

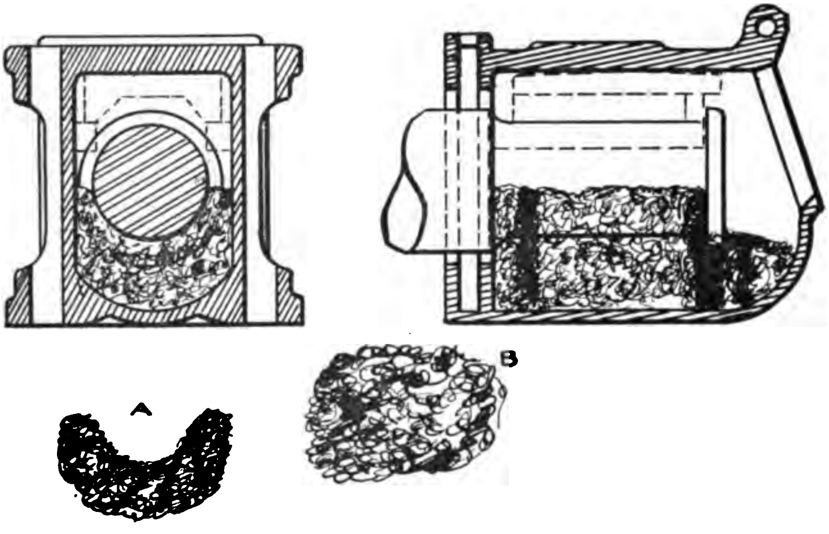

Fig. 2. Showing Method of Packing Tender Truck Boxes

quite up to the center of the journal, and this part of the sponging should be built up square with the edge of the collar, without any thread contact with the waste that is put in the front of the box and at the end of the journal to hold the sponging in place. This method prevents the collar of the journal from pulling the sponging from the back of the box. Feeders of all oil cups should be adjusted to feed as small an amount of oil as will run the pins cool, but at the same time should be a constant and positive feed. Otherwise, if gauged too closely, the supply may not reach the bearing at the proper time and in sufficient quantities, and trouble will result. For the cylinders, use dry steam and set the lubricator feeds to suit the speed and service, and in accordance with the size of cylinder. It is advisable to just crack the joint of the throttle valve open enough to prevent smoke and gases from being drawn into the cylinders and steam chest when drifting, and you will be reasonably successful in lubricating your engine.

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330. Effect of Heat on Engine Oil.—"Why is it bad practice to keep engine oil too close to boiler-head in warm weather?"—*O. L.*

Answer.—Because the increase in temperature of the oil will make it very much thinner, and it will not lubricate the bearings as well as when it is at its normal temperature. It will also run through the sponging more rapidly, leaving the waste on the top of the box dry.

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The Westinghouse Air Brake.

Answers by F. B. Farmer.

234. Brake Cylinder Pressure With Special Retaining Valve.—"The Pennsylvania railroad has adopted a retaining valve holding 50 pounds in the brake cylinder instead of 15 pounds as held by the old style valve. Now then, suppose the engineer makes a full service application with these new valves and gets 50 pounds in the brake cylinders, the same as they hold, next releases the triple valves and fully recharges to 70 pounds and then makes another service application, how many pounds can he reduce his train line before it and the brake cylinders will equalize, thus fully applying the brakes? Also, will the second application give him more braking power on cars with 5 inches piston travel and, if so, how much? What effect would the same reduction have on cars with 10 inches piston travel?"—*J. W. F.*

Answer.—The retaining valve referred to is a special one intended for cars of high capacity that have to be held, when loaded, down very steep grades. It is not expected that such cars will be used to any considerable extent in general service. However, the valve has three positions, as against two with the standard 15-pound valve. With the handle straight down it is cut out; when turned horizontal it retains 25 pounds; but when midway between these positions, or at an angle of 45 degrees, it retains 50 pounds. Therefore, even though cars fitted with it were used in general service the valves would hold but 25 pounds, if the handles were turned to the horizontal position, the same as is required to cut in the standard valves.

With the auxiliary reservoir recharged to 70 pounds an 8-inch diameter brake cylinder will give about the following pressures if the brake is fully applied in service, where the amounts named were held by the retaining valve and with the specified piston travels: 5-inch piston travel, 59 pounds where 15 pounds were retained; 61 pounds where 25 pounds were retained. and 66 pounds where 50 pounds were retained; 7-inch piston travel, 57 pounds where 15 pounds were retained: 59 pounds where 25 pounds were retained, and 65 pounds where 50 pounds were retained; 10-inch piston travel, 54 pounds where 15 pounds were retained, 58 pounds where 25 pounds were retained, and 64 pounds where 50 pounds were retained.

As the second application was, like the first, made from 70 pounds train-pipe pressure, it follows that to fully apply the brakes the following train-pipe reductions would have to be made: With 5-inch piston travel and 15 pounds retained, 11 pounds; with 25 pounds retained, 9 pounds, and with 50 pounds retained, 4 pounds; with 7-inch piston travel and 15 pounds retained, 13 pounds; with 25 pounds retained, 11 pounds, and with 50 pounds retained, 5 pounds; with 10-inch piston travel and 15 pounds retained, 16 pounds; with 25 pounds retained, 12 pounds, and with 50 pounds retained, 6 pounds.

However, it should be distinctly understood that the figures given are not intended as a guide in braking and should not be so used. The reason is that conditions in practice can never approach those that must be had to answer such questions with a fair degree of accuracy. In service we find leakage in brake cylinders, retaining valve pipes and release valves, choked feed grooves, air gauges lacking accuracy and sensitiveness, long and leaky train pipes, much variation in piston travel, lack of time to thoroughly recharge, inadequate pump and main reservoir capacity and a crowded, jolting place with a far-off gauge, poorly lighted and with the face placed at most anything than a right angle to the line of the engineer's vision. Not that all of these necessarily exist at the same time, but each and many often enough to be readily recognized by engineers and firemen.

All are familiar with the statement that a 20-pound reduction fully applies brakes, this assuming proper piston travel and 70 pounds train-pipe pressure. Yet most or all engineers in mountain service have noted occasions where the train was slowed by a farther reduction *after* 20 pounds. The rule is correct, but it refers to a 20-pound reduction made in a short time and does not mean the brakes with considerable cylinder leakage will *remain* fully applied. This is not mentioned to encourage excessive train-pipe reductions, but to illustrate the point that the results of tests under more favorable conditions than obtain in practice can not be used as absolute guides in service. They do teach valuable lessons where the other conditions in practice and their effects are known and considered.

The 10-inch diameter brake cylinder is now being applied to many new freight cars of large capacity. It not only permits of braking such cars higher than is practicable with the 8-inch cylinder, but it increases the effectiveness of the retaining valve if the brakes are quickly recharged and the triples applied. This is owing to the slower reduction in brake cylinder pressure by reason of the larger cylinder volume that must be discharged through the same restricted port in the retaining valve. With an ample pump and main reservoir capacity it is often possible in practice to recharge and reapply before the pressure gets down to 15 pounds in 8-inch cylinders, and the larger cylinder, with its slower reduction, enables a farther gain of this kind.

235. Slide Valve vs. Old Style Feed Valve.—"What advantage, if any, is claimed for the improved slide valve feed valve over the old style feed valve attachment?"—*A. J. D.*

Answer.—The slide valve feed valve is more accurate in its operation and does not get out of order as soon as the old style. With the latter it is easier for dirt to get under its supply valve, the small, poppet valve that controls the opening into the train pipe, than it is with the similar part in the other valve. Leakage past the supply valve causes too high train-pipe pressure, particularly with a short train or light engine. Again, the rubber diaphragm in the old valve gradually becomes distorted by reason of the rather high train-pipe pressure on one side and atmospheric on the other. Also, it is often crushed at the edge by the spring box, the long piece below being screwed up too tight. Distortion of the diaphragm tends to prevent the correct opening and closing of the supply valve The brass diaphragm overcomes this, but can not be used where as much movement is required as is necessary with the old style.

236. Pumping Air Pressure Above Steam Pressure.—"Can some one tell me whether it is possible to connect the air in some manner that will result in pumping more than boiler pressure? For instance, with a boiler that carries only 150 pounds of steam can it be arranged so as to pump 200 pounds of air?"—*A. J. S.*

Answer.—Yes, this is often done. In fact, the old 8-inch pump can compress a trifle higher air pressure than the operating steam pressure. It is owing to the steam cylinder being 8 inches in diameter and the air cylinder 7½ inches.

Many special pumps are made for private industries where this very condition has to be met. By using a standard steam cylinder and a sufficiently smaller air cylinder a far higher air than steam pressure can be obtained, but it results in less air compressed per minute.

Another method is termed compounding and requires two or more pumps, depending on the proportion of the steam and air cylinders, the boiler pressure available and how much air pressure is wanted. One pump draws from the atmosphere and discharges into a reservoir, as usual. Another pump takes its air supply from this reservoir and discharges into another one. If the first pump can raise the pressure to 50 pounds the second can increase it to 100 pounds, and so on.

Still another way of getting more air than steam pressure and with both cylinders alike is by use of a fly-wheel. The first half of the compression stroke gives a very small increase in air pressure. The steam can then speed up the fly-wheel and the energy thus stored is sufficient to, with the further aid of the steam, drive the air piston to the completion of its stroke and deliver an air pressure higher than the steam pressure.

While there are a number of additional details necessary in fitting up to accomplish the result asked about, yet the foregoing shows in general how it may be brought about.

237. Brake Valve Blows on Lap.—"Would you please explain in the Air Brake Department of the Magazine, what would be the effect on the working of a freight brake triple if the tube that connects the triple with brake cylinder is bursted; also, what is the cause when making a service application with a D-8 brake valve on a 25-car train, where the train line exhausts to zero unless a slight kick off is made and then handle is placed on lap, when no further exhaust takes place? With light engine valve works O. K."—*J. P.*

Answer.—The cause of the trouble is either a leak from above the equalizing piston, comprehending the main joint of the brake valve and the connections to the equalizing reservoir and black hand of gauge, or leakage past the equalizing piston. Where there is but a slight leak from above this piston it will not usually affect the brake valve action with a light engine, but becomes more noticeable in its effect as the length of train increases. The same is true of leakage past the piston.

Usually the D-8 brake valve, owing to long service, is pretty well worn about the equalizing piston bush, this and ring wear causing leakage past the piston. The tendency toward such leakage is slight except when the piston is gradually closing the train-pipe exhaust, as after a service reduction with a long train. This closing should be gradual and, when almost completed, if the piston leaks and especially where it is dry, the then slow train-pipe reduction will be followed by an equal fall in the pressure above the piston and thus prevent getting enough difference to force the piston down and stop the discharge. The "kick off" mentioned, or even a slight blow on the side of the valve, will cause it to close, but the former is undesirable when running as it is liable to release some of the head brakes.

This fault should not be confused with a similar continuation of the service exhaust, due to the leakage from auxiliary reservoirs and brake cylinders through the triples and into the train pipe, where the train-pipe reduction is greater than necessary to fully apply the brakes. A blow at such a time is no fault of the brake valves.

To test for the leakage from above the piston, in case a lighted torch will not find it, make some soapsuds and apply same liberally to all joints subjected to equalizing reservoir pressure. In rare cases the back hand gauge tubing being cracked has caused the trouble. Soapsuds on the joints of the gauge cover will detect such a leak.

The packing ring in the equalizing piston is not expected to make a perfect joint. The amount of leakage past it can be fairly well determined by placing the brake valve handle on lap, having some one open the angle cock at rear of tender, leaving it so, and noting the time required for the black hand to fall from 70 pounds to 20 pounds. Comparison with another valve that is working well will indicate whether or not the leakage is probably excessive. Where there is no leakage from equalizing reservoir pressure and the trouble disappears for a time after cleaning the piston and lubricating it with valve oil or a soft grease like "Kent's Compound," used for brake cylinders, the fault is undoubtedly leakage past the piston. A new ring may remedy it, but if the bushing is much worn it will have to be repaired.

238. Leaky Tube in Auxiliary Reservoir.—"What would be the effect of a leaky tube in auxiliary reservoir?"—*A. J. K.*

Answer.—Answering the question about the leaky tube in the auxiliary reservoir, it would make a blow at the exhaust port of the triple valve whenever the valve was in release. As it would be a leak direct from the auxiliary reservoir it would make this brake slow in charging and applying and would generally cause it to release immediately after an application, except the train-pipe reduction exceeded that necessary to fully apply this brake. A leaky tube is very uncommon and a burst one is unknown.

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The New York Air Brake.

Answers by J. P. Kelly.

148. Pump Governor and Brake-Pipe Air Gauge Connection Below Brake Valve Cut-Out Cock.—"On some new engines which recently were delivered to our road I notice that the train-pipe connection of the duplex governor, and of the black hand of the air gauge, is made into the train pipe directly beneath the cut-out cock. What is the reason for this change in location, and what advantage is gained by it?"—*M. J. K.*

Answer.—When double-heading engines the second engineer closes his brake-valve cut-out cock, unless he is to handle the brakes, which is rarely the case nowadays; and with the brake-pipe air gauge connection made direct to the brake valve, he also cuts this gauge out from the continuous brake pipe. Therefore he can not know what pressure is being carried in the brake pipe, or what reductions the leading engineer is making when applying the brakes.

Some roads think it is a good idea to have the second engineer know under all conditions of train handling how much pressure is being carried in the brake pipe; how much reduction is being made when applying brakes; and when releasing, if necessary to cut in the second pump to assist in recharging, to have him know when the brake pipe and auxiliaries are fully recharged, so that he will cut out his brake valve and pump again at the proper time. Hence, the air gauge (black hand) and brake-pipe governor top connections are now made, in many cases, at a point in the brake pipe below the brake valve cut-out cock, so that cutting out the brake valve does not cut out the brake pipe (black hand) air gauge, and the second engineer knows exactly the condition of the brake pipe with respect to pressure, although the leading engineer is manipulating the brakes.

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149. Drain Cocks in Tender Drain Cups and Not in Car Drain Cups.—"If the drain cups under cars do not need drain cocks—they never have any—why it is that the tender drain cups have them?"—*W. H. M.*

Answer.—Tender drain cups are supplied with drain cocks because they are located closer to the main reservoir than the car drain cups are, hence, are likely to catch more moisture, which must be frequently drained off, especially in cold weather.

The drain cock makes the draining of the tender cup a quick, easy operation, and, therefore, one that is likely to be performed as often as necessary.

In freezing weather the tender drain cup should be drained immediately after charging the train. If this is done the chances of frozen brake pipes will be greatly reduced.

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150. Combination of Westinghouse Brake Valve Reservoir and New York Brake Valve.—"On a new engine which lately came to us from the locomotive works we found a Westinghouse equalizing reservoir instead of the New York cast-iron reservoir, connected to the brake valve, and when making service applications found that the service notches would let out about 5 or 6 pounds only.

"Why was this?"—*H. F. B.*

Answer.—A few cases of the above have happened, and the result in service applications was as stated. The Westinghouse brake-valve reservoirs contain about 650 cubic inches of air, while the New York supplementary reservoirs contain about 92 cubic inches. Hence, when making service applications, with the Westinghouse reservoirs attached, the larger volume which it contained expanded into the cylinder space through which the piston *E V 104A* travels, without reducing its pressure but a few pounds. Therefore, the cut-off valve *E V 110* was moved along quicker to cover port *F*, not allowing time for the brake-pipe pressure to reduce through its port the amount it should.

The larger the volume of the reservoir piped to chamber *D* of the brake valve, the smaller will be the train-pipe reduction which can be made in the service notch.

The ratio of the Westinghouse brake-valve reservoir to the New York supplementary reservoir is about 7 to 1; therefore, from 4 to 5 pounds service reduction is about all that you could expect to obtain in service, with the cross-combination.

From the above it is obvious that a Westinghouse brake valve reservoir should never be connected to a New York brake valve; nor, vice versa, a New York reservoir to a Westinghouse valve.

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Train Rules and Train Practice.

Answers by H. A. Dalby.

174. Work Extras Protecting.—"We are on work extra 847 between A and D and have orders when we start out to protect against extra 1292 west after 10.20 a. m. We want to go from B to D (east) at 10.15 a. m. and ask for help on extra 1292, for it will take us 30 minutes to run to D. We get an order that extra 1292 west will wait at D until 11 a. m. and at C until 11.15 a. m. for work extra 847. We went on the order and made D, but some of the men here contend that the dispatcher had no right to give an order for the extra to wait at D and C for us for the reason that it conflicts with the order we have to protect against them and if we get any more help it should be done by changing the times of protecting at the different stations. It seems like a good order to use. Is it proper?"—*A. J. S.*

Answer.—We have known this argument to be advanced, but we do not think much of it. Form 3, example 3, from which it is taken, does not indicate that it must only be used to hold a regular train or a train that has been made superior to another in the real sense of a superior train. We think it is highly proper to use it to restrict the progress of an extra when a work extra is protecting against it. The only thing that could be used to support the idea referred to by our correspondent is the last paragraph of the explanation to Form E, which says, "The train last named is required to run with respect to the time specified, as before required to run with respect to the regular schedule time of the train first named." Of course an extra has no "regular schedule time" unless it has previously been made a superior extra, but even this clause does not seem of sufficient importance to warrant the teaching that such an order must not be given to the extra in a case like the one mentioned. The extra is superior in the sense that it goes along regardless of the work extra except, of course, looking out for a flagman.

The "wait" order is almost universally used in cases of this kind and is certainly the most useful form that could be employed. If it was prohibited the only way that the movement could be effected would be with an order like this: "Work extra 847 will protect against extra 1292 between C and D after 11 a. m., instead of 10.20 a. m., and between B and C after 11.15 a. m., instead of 10.20 a. m." This is a long, awkward order, and if a number of stations were to be included it would of course be still longer, while it would not be any safer than the "wait" order.

There may be a few men who would object to the "wait" order, but we think very few.

175. Calling Attention to Signals.—"Under Rule 14 it says that the whistle signal (k) must be used to call attention of trains of the same or inferior class to signals displayed for a following section. Does this mean that they must call the attention of extras to signals? Are extras considered as having 'class?'

"How would it be in the following case? We are on No. 88, a second-class train east bound and we get an order that No. 55, a third-class train, has right over us to D. 55 comes along carrying green signals and of course we are held until the second section comes, but the first section does not whistle any signals to us. Some say that it is not necessary, for the rule does not require it, but it seems to me that 1st 55 should give the signal to us as we are held by the green signals."—*H. B. T.*

Answer.—Although the rule as it appears in the Standard Code specifies only "trains of the same or inferior class," yet it is very plain that the requirement should apply to all trains which may be inferior *in any way* to the train displaying the signals. It is true that extras have no "class," as that designation is only conferred by time-table, therefore the strict meaning of the rule would not include extras. However, they are inferior to regular trains and the whistle signal should be given to them.

Inasmuch as the rights of trains may be reversed by train order, we think it would be wise to require a train displaying signals to call the attention of every train it meets to the fact. Even though 1st 55 had no orders against No. 88 it is possible that the second section might have right over them and it would serve to emphasize the fact to No. 88, possibly even to remind them that it was 1st 55 and not 2d that they were meeting.

Years ago it was the practice on some roads to use this signal for every train met, and for many reasons it was a good rule.

176. Supersedure and Annulment.—"We are on extra 222 and get the following: 'Order No. 1.—Eng. 222 will run extra Texarkana to Pine Bluff and meet No. 15 at Fordyce.' We get over to Camden and get Order No. 2 as follows: 'Extra 222 east will meet 1st No. 15 at Thornton and 3d No. 15 at Kingsland instead of Fordyce.' Now, where will we meet the 2d section? No. 15 is due at Thornton at 10.05 a. m. and extra 222 gets there at 10 a. m. The board is out and we get Order No. 3: 'Order No. 2 is annulled.' Now, where will we go for No. 15?"—*Member.*

Answer.—Strictly speaking the second order does not change the meeting point with 2d 15, which is Fordyce. The third order annuls the second and gives the extra no meeting point with 1st and 3d 15, but does not affect the second section, which is still to meet at Fordyce. The extra, therefore, stays at Thornton for the 1st and goes to Fordyce for the 2d and 3d sections.

In our opinion it would have been better to handle the matter differently, if for no other reason than to avoid questions and make everything in plain words. The first meeting point was with "No. 15." Of course this means all sections of No. 15, but when it was afterward found that there were to be three sections and different meeting points were to be made the sections should have been designated. It places the extra in the somewhat inconsistent position of meeting the first section on an order designating it as such and then proceeding to the next station to meet the 2d section on an order calling it "No. 15." It does not look well or sound well, even though it may be no violation of the rules.

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Railway Club Proceedings

Recent Terminal Improvements.[*]

The Terminal Railroad Association of St. Louis is interesting from a railroad transportation point of view, representing as it does the largest experiment now in progress, of which I have any knowledge, in the way of concentration of railroad transportation, both freight and passenger. I believe that this statement can be sustained. It does not imply that there are more carloads of freight handled by the Terminal Railroad Association of St. Louis than any other terminal is handling, or that more passenger trains or passengers arrive at or depart from the Union Station than from any other passenger station, because it is probable that neither of these things is true. It is true, however, that more railroads have united in the Terminal Association in having their terminal work transacted by one common agent, than at any other point which can be named.

The Terminal system as now operated was not originally designed to meet the present situation. In fact, like almost all other railroad terminals, both simple and compound, its plans are almost purely empirical, various parts of it having been built at different points to meet such exigencies as arose from time to time. With the growth of the transportation lines of the United States a large additional number of railroad companies have come to use the original facilities, and the natural increase in the business of the twenty-odd lines of prosperous railroads now using the terminals represents an enormous aggregate.

Early in 1902 the management of the Terminal Association realized that its business was not being handled in a way to satisfy modern requirements, and operations from day to day were demonstrating that no refinements of operating methods were capable of bringing about the desired results. In other words, plainly stated, its facilities were inadequate for its growing business. In addition to this, the World's Fair was shortly to take place in St. Louis, and would require the handling of a large amount of freight both for construction and for exhibits, as well as cause an increase in passenger movement, which the World's Fair officials estimated at from 30,000,000 to 35,000,000 people.

When a single railroad company realizes that its traffic is being pinched by lack of terminal facilities at an important point, the knowledge is disquieting. How much more so was it to the Terminal Association to realize that the business of twenty-odd individual railroad lines might be affected by its operations?

The Terminal Association thereupon undertook to increase its facilities to a point which would enable it to handle the business of all these lines, and in a certain sense the question of whether such concentration could be carried to the point which it had reached in St. Louis was on trial in the case of the St. Louis terminals; and it became not unlikely that success or failure in solving the problems in this case would be accepted, in many instances at least, as a demonstration that concentration could or could not be successfully carried to the point reached in St. Louis.

At the time when these improvements were undertaken, and in view of the great business promised by the fair, it seemed to a great many that the experiment was bound to fail and that the great volume of traffic passing through the terminals had reached such proportions that it could not be successfully handled and distributed by one organization. Freight congestions on both sides of the river were even then almost continuous, and a large proportion of every day's business was subjected to costly and exasperating delays on Terminal lines. The public suffered much inconvenience from these delays, and no citizen of St. Louis is unfamiliar with the meaning of the words "freight congestion." In the same way there was a great deal of vexatious delay to passenger traffic, and trains would sometimes be detained for an hour or more almost within sight of the Union Station.

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[*] **Paper by Mr. Daniel Breck, Chief Engineer, Terminal Railroad Association, St. Louis, Mo.**

Through baggage was often left over and forwarded on following trains, occasioning much inconvenience and some losses, especially to commercial travelers,' and this condition of affairs caused much inconvenience and anxiety to persons who are familiar with conditions of travel through the St. Louis gateway.

St. Louis being, as stated, the largest experiment in the way of concentrating the passenger traffic of a city at one great union station, it will be seen that the whole scheme of having one union station for the purpose of handling all of the business of a great city was also on trial; and it is scarcely to be doubted that if a vote could have been taken at the time referred to, a decision would have been reached that it was impossible to handle such business as reached the St. Louis Union Station regularly without greater delay than would have been incurred if the station had been broken up into separate terminals and scattered throughout the city.

The decision of this question rested largely with the Terminal Association, which undertook to show that the St. Louis terminals could be so arranged as to handle the business at one union station without abnormal delay. Other cities which found it necessary to undertake the enlargement of their passenger facilities found themselves confronted with the question whether it would be better to try to handle all the business of the city in one station or divide it among several. Kansas City, for example, was debating this very question, and, fortunately for the future of transcontinental travel via St. Louis and Kansas City, has decided in favor of one union station. Chicago was answering it in favor of the Chicago system, by which the various roads enter four or five large terminals widely separated and scattered throughout the city, making it necessary for through passengers to transfer from one station to another by some other line of conveyance, such as bus, carriage or street car.

Aside from the fact that the St. Louis terminals had very large amounts of money invested in the plant at that time, which fact itself was enough to make it necessary to continue to use one union station if it could possibly be accomplished, the arguments usually advanced in favor of separate terminals, excluding the question of the feasibility of doing it all in one terminal, are based on an economic fallacy. Thus the argument that Chicago derives benefit from the transfer of through passengers who travel via that city by reason of the fact that the passengers have to breakfast in the town, or have to contribute money which supports the transfer companies of that city, or that the railroads must hire large numbers of agents to transfer the baggage from one depot to the other, brings back to mind directly the almost forgotten Erie freight, so-called, of fifty years ago, which is very interestingly described in a recent publication by Mr. Frank Spearman, called the "Strategy of Great Railroads." Briefly stated, that war began in an effort of two of the short lines of railroads of that day to consolidate, one entering Erie, Pa., with a six-foot gauge, and the other leaving Erie with a four-foot ten-inch gauge, necessitating transfer of all freight and passengers at Erie. From Buffalo to Cleveland in those days two changes of cars were necessary, one at Dunkirk and one at Erie, and when it was decided to change the track gauge of the roads meeting at Erie, so that passengers might ride from Buffalo to Cleveland, through Erie, without changing cars, a local war ensued that has never anywhere been paralleled in our country. The people of Erie used the same arguments that we hear used today; that Erie would be made a way-station, its hotel business ruined and its buses put out of business; the transfer of passengers at Erie meant that passengers had to get meals there, live stock had to be transferred, reloading of freight gave employment to large forces of freight handlers, etc. And these arguments were so used to stir up the people that, as told in the volume referred to, on the morning of December 7, 1853, the people assembled at the ringing of the courthouse bell and tore down the long wooden bridge over the river at Erie. During the course of three years' agitation that followed this bridge was rebuilt and again torn down and burned for the same cause. While the Erie war offers an extreme case of futile resistance to progress, it illustrates the fallacy which lies at the bottom of all such opposition; and I think it will undoubtedly be demonstrated in future that at least the great through lines of travel must not be broken by an intermediate journey on some form of local conveyance, with the attendant uncertainty of making connections with passengers, baggage and mail, and with the growing disposition of travelers to accomplish a long journey without even changing cars. Therefore, it was believed that the best interests of the community could be served if the experiment of handling all travel at one union station could be made a success.

In undertaking to improve and increase the terminal facilities it was, of course, necessary to analyze the situation, find out why the business was not being handled in a way to meet modern requirements, and what must be done to handle it properly. The first phase of the problem recognized was a lack of good internal circulation; that is, lines of free, uninterrupted movement throughout the property itself. This must include main lines open for free movement from all outlying parts of the property leading direct to the union station, as well as ample lines of movement connecting the various important points within the terminal territory, one with another. These main lines must not only be constructed, but they must be kept open for movement, and every device that was known to expedite movement must be adopted to increase their efficiency. Therefore, at all the important and complicated crossings of these lines with themselves or with the lines of the various individual railroad companies elaborate interlocking plants were established, and along the main lines wherever movement could be expedited in that way, the lines were equipped with automatic block signaling in such a way as to give continual notice to trains as soon as the lines were cleared for them to proceed. The system of main lines as realized by these improvements comprises a double track belt beginning at the Union Station and completely encircling the city, utilizing, by agreement, the Wabash double track main line between Page avenue and Grand avenue. On the old route from Union Station to Granite City there were long stretches of single track, while on the new route there is double track all the way, three tracks between Biddle and Mullanphy streets, four tracks between North Market and Bremen avenue, and three tracks from Madison to Granite City; through double freight tracks connecting East St. Louis and Madison yards; four tracks pass Madison yards, two of them being passenger tracks, and the Illinois Transfer has been double-tracked throughout its length. At the point where the passenger train movement is most concentrated, namely, opposite the Union Station trainshed and just south of the tower, seven lines of main track, one for freight and six for passenger, have been provided, where originally there were but two.

The Eads and Merchants bridges were taken into consideration under the general heading of this main line movement. It was found that both these bridges required strengthening of many members in order to put them in condition to handle the heavy engines now in use. The Eads bridge was strengthened so as to take an increased load of 20 per cent. and the Merchants bridge an increased load of 30 per cent. Obviously all power must move freely over these bridges unless they were to present serious obstruction to proper movement, as the selection of light power and attaching it to trains before they could move over the bridges would cause confusion and delay. Furthermore, if a light engine could take only twenty-five carloads over the bridge and a heavy one could take fifty, the number of movements, already too great, would be doubled if light engines must be used exclusively.

The tunnel at the west end of Eads bridge offered still further obstruction to free movement. Two interlocking towers, one at the east end and one at the west end of the tunnel, although placed as close to the end of the tunnel as they can properly be, are about 1.1 miles apart, and the time required by a train to clear the distance between them is approximately four minutes. In addition to other incidental disadvantages of operating in the tunnel there is a sharp curve, nearly 12 degrees, about midway in the tunnel, and the section of the tunnel is so small as to prevent the proper elevation of track to allow for a high speed movement around this curve. Furthermore, for the most obvious reasons, the tunnel is operated under what is known as the absolute lock and block system; that is, a train can not enter the tunnel until a train preceding it on the same track has gone entirely through the tunnel and come out at the other end, and this is secured by a system of signals requiring the concurrence of the operators at both ends of the tunnel. The result of this is, as easily seen, that only 15 trains can use the tunnel in one hour in each direction, and as there were times both morning and evening when trains were leaving and arriving at the station at the rate of 80 trains in 60 minutes, those destined via the tunnel even came to a greater number than 15 each way per hour. The Merchants bridge was, however, not being worked to its full capacity; so the main lines were made to include an opening up of routes such that traffic which had been going over the Eads could be, if necessary, diverted over the Merchants. In this way, even high speed passenger trains which formerly ran through the tunnel and over the Eads bridge were made to take the comparatively circuitous but relatively high speed line over the Merchants bridge, with the result that, as in the case of the Vandalia and B. & O. lines especially, the loss of time was only from three to five minutes over schedule, and the actual loss of time which might have amounted to an hour or more was saved.

If this had been a technical paper, the whole of it might well have been devoted to a description of the work on the Eads bridge. This is in itself a very beautiful structure. It is a continual source of interest and pleasure to observe the geometric figures which appear in fine tracery when the lines of this bridge are silhouetted against the sky. The work of strengthening it, which was done by Mr. J. C. Bland, engineer of bridges of the Pennsylvania Lines west of Pittsburg, has been done in such a way as certainly not to mar in the slightest degree the beauty of the bridge. The scientific way in which strengthening members have been applied at the weak spots would be most interesting in detail, and the results in strength, as well as in stiffening the bridge against oscillation, have been very gratifying. The description of the examination of the tubes of which the trusses of this bridge are composed, certain holes being drilled and the inside of the tubes being examined by means of small electric lights and reflecting mirrors, would also be interesting, as well as of the means adopted for carrying certain portions of the bridge by means of supplementary members, while certain connecting pins which had become corroded were repaired, would be interesting, but space is lacking for more than this reference to it.

Following the construction of the main lines, the next thing to be accomplished was to provide largely increased freight storage and switching facilities to care for the large daily volume of freight cars handled, and thereby providing means for keeping this traffic within the yards and keeping the main lines clear. In accomplishing this a great deal of new construction and rearrangement was done in switching yards. Independent drill tracks were provided in cases, which were very numerous, where the yards had been drilled on such main lines as then existed. As the result of this work the total freight car capacity of the property has been increased from 4,255 40-foot cars to 6,350, the present capacity.

Among the first work of this kind undertaken was the construction of an artificial gravity "hump" yard at East St. Louis. No doubt you are all familiar with the operation of a hump yard, which consists merely in pushing the cars to the top of the hump, making the necessary cuts between the cars while the slack is taken as they are pushed up, and when the cars pitch over the top of the hump they gather momentum by gravity and are led into the various classification tracks by switch tenders. In order to get accurate data as to the amount of switching actually done in this yard, an accountant was stationed in a cabin situated near the drill track, and the actual time when each cut of cars began to pass this cabin, the number of cars in the cut and the time when the last car was switched were set down. From the data thus obtained it was learned that the switching capacity of a yard of this character is not less than 100 cars per hour, with a percentage of 80 switches to each 100 cars, almost every car in this switching having a different destination. Apparently this rate could be maintained throughout the 24 hours if the yard were large enough. The tracks of this particular yard, however, were not long enough to get the full benefit of the rapid switching, as the shorter tracks were very quickly filled up, and until they could be emptied the switching must be stopped.

Various alterations were made to separate and untangle conflicting lines of movement at the entrances to the various yards, and the yards in many instances were subdivided by constructing more than one drill track, thus enabling more than one engine to work at one time without interference one with another. These matters are only interesting when illustrated in detail with a description from actual conditions of the lines of movement for which provision was made and the method of subdividing the yards so that more than one engine could work continuously, and time is lacking here for this detail.

On a terminal property like this the question of interchange tracks for interchanging business with connections becomes one of first importance, and groups itself with freight storage and handling facilities. These interchange tracks are, under the usual railroad practice, in duplicate, each road furnishing a track on which it receives business delivered to it by the other. Properly located, these interchange tracks should be at the junction of the two lines, and each road should be able to make deliveries to the other without going on the other road's main line. The capacity of these interchange tracks to contain cars and the prompt and regular clearing of them, and keeping them clear as often as they are filled, is the most essential feature of handling the Terminal Company's business, and 90 per cent. of all delay and congestion experienced by the Terminal within the past three years may be traced to failure at the interchange tracks by one or the other of the parties to the interchange. To facilitate this interchange, the Terminal has recently built tracks, conveniently situated, at many points, among which may be mentioned the Valley Division of Iron Mountain, Southern, L. & N., St. Louis and O'Fallon, B. & O., Vandalia, Troy and Eastern connections with the Illinois Transfer in Illinois, and the Wabash on the West Belt in Missouri; which, with other arrangements that have been made, will take care of a total of nearly 1,500 cars. This contributes directly to the free interchange of business, and means that where two years ago 1,500 cars were held over for interchange, they can now be delivered at once. This means 1,500 cars at one time, and with proper effort these interchange tracks can be handled two or even three times per day.

In order to provide ample power for handling the business 50 six-wheel connected switching locomotives, with a weight of about 135,000 pounds on drivers, were purchased. These locomotives have some features of special adaptation to their work, among which may be mentioned the large compressed air storage capacity of 20 cubic feet, which enables them to charge a train very quickly with air; the large tank capacity of 5,000 gallons of water and six tons of coal; and the combination of automatic brake with the straight air brake, the straight air being very quickly released in switching movement.

For proper care of its equipment, which has been largely increased and now includes 99 locomotives, railway repair shops were erected at Brooklyn, Ill., consisting of a power-house, eleven-stall machine shop, embracing boiler shop and blacksmith shop, with all necessary machine tools, transfer tables, wood and paint shop, store house, oil house, sixteen-stall round-house, and complete coal, sand and water station.

So far, in increasing the terminal facilities we have dealt with main lines and with freight car yards and switching capacity, these being the foundation of all terminal work, and having thus cleared the ground, the question of increasing the capacity of the Union Station was next approached.

It was obvious from the very first that any effort to improve the track plan in front of the station would involve the most radical rearrangement and extremely heavy expenditure. The question was therefore approached with the utmost gravity, but operations were demonstrating day by day that even the ordinary business of that period was in excess of the capacity of the track system. This was previous to the World's Fair, and the authorities of the fair estimated that the attendance would be between 30,000,000 and 35,000,000 people, which, of course, would be largely in addition to the normal travel.

Obviously, therefore, something must be done, and the weighty interests involved determined the undertaking, although the expense from the very outset seemed almost prohibitive.

By an examination of the old track layout it will be seen, to begin with, that the express buildings had been brought down to within 75 feet of the central axis of the trainshed, thus constricting the "throat" in such a way that it could not be widened without moving these buildings.

Furthermore, there were the strictest limitations to what could be done, due to the short distance—1,103 feet—from the south end of the train shed to private property of railroad lines to the south, which these lines considered indispensable to the conduct of their own business, and which the Terminal could, therefore, not secure. Further limitations were found on the east in the Eighteenth street viaduct, and on the west in the Twenty-first street viaduct; and even if there had been time to negotiate for alteration in these viaducts, which there was not, it was extremely doubtful whether the city would have consented to any alterations. In fact, in view of the reception which the Terminal met from the city when it asked for certain privileges from it, which are conspicuously trivial as far as the city is concerned, there is every reason to think that the city would have refused to allow any alterations. Therefore, all improvement in the track lay-out must be made within the area bounded on the south by a line 1,103 feet from the south end of the old train shed, on the east by the Eighteenth street viaduct, and on the west by the Twenty-first street viaduct. This gave an amount of room entirely insufficient for making an ideal or even an approximately good track lay-out, and the result of all the study that could be brought to bear by those engaged appears in the new track lay-out, which, while not good, is, it is to be hoped, the best that could be secured within those limitations.

The theoretical procedure in this case was to lay down what was regarded as the ideal plant, and then approximate it as closely as conditions would permit.

The first and most important factor was to secure a sufficient number of approach tracks in the "throat," so-called, to readily serve all tracks under the shed, and for the purpose of ascertaining what the usual practice was in such matters, the following information was secured for comparison to show how many tracks have usually been provided in approaching a given number of station tracks, giving the ratio between the two:

TABLE SHOWING RATIO OF STATION TRACKS TO APPROACH TRACKS.

Station and Location.	Approach Tracks.	Station Tracks.	Ratio.
London Bridge, London, Eng.	8	25	3.12
Waterloo Station, London, Eng	6	18	3.00
Liverpool Street Station, London, Eng	6	20	3.33
Broad Street, London, Eng	4	8	2.00
Euston, London, Eng	4	13	3.25
St. Pancras, London, Eng	3	9	3.00
Great Central Ry. (proposed), London, Eng	4	15	3.75
Boston & Maine, N. T., Boston, Mass	8	24	3.00
South Terminal, Boston, Mass.	8	28	3.50
Penn. R. R., Philadelphia, Pa.	2	16	8.00
Phila. & Reading, Philadelphia, Pa	4	13	3.33
St. Louis, St. Louis, Mo	4	32	8.00
Union Depot, Kansas City, Mo.	4	13	3.33
Grand Central Station, New York City, N. Y	4	19	4.75
Erie R. R., Jersey City, N. J.	2	10	5.00
Penn. R. R., Jersey City, N. J.	4	13	3.25
West Shore R. R., Weehawken, N. J	2	15	7.50
Central R. R. of N. J., Weehawken, N. J	2	12	6.00
D., L. & W. R. R., Hoboken, N.J.	2	10	5.00
P., N. Y. & L. I. R. R. (proposed), New York City, N. Y	6	22	3.67

It is seen that in some of the large stations in the world the ratio of tracks under the shed to approach tracks is as low as three to one. but the average of these shown is four to one, and it was decided that if the ratio of four to one could be secured in these plans all business that could reach us over the connecting lines could be handled. The ratio at St. Louis was eight to one. All the study and ingenuity at our command failed to develop a plan which would give us the desired ratio of four to one. The best that could be produced within the rigid limitations of space and direction of tracks, using what was regarded as the minimum radius of curvature, was the plan finally adopted, which gives six approach tracks to 32 tracks under the shed, or a ratio of five and one-third. The original ratio being eight and the desired ratio being four, it will be seen that the ratio of five and one-third, as finally secured, gives but two-thirds of the improvement that it was desired to make between the original plan and what was regarded as the ideal plan. To reach even this result it was necessary to adopt 15-degree curves, which, in some cases of turn-outs, on the curved approach tracks, etc., were sharpened to as high as 16-degree and 20½-degree curves, this degree of curvature being obtained, however, by the use of special frogs, curved from the frog point to fit the required radius. This was regarded as being dangerously near the limit which could be safely operated by modern equipment, but experience has shown that it is at least safely within that limit.

Under the original scheme the "throat" had been projected so far north that a considerable percentage of track space under the shed was not utilized. By the improved plan the train shed was lengthened 180 feet and all the track space fully utilized. The original train shed capacity in 80-foot coaches was 225. The present train shed capacity in 80-foot coaches is 330, a substantial and important gain.

These changes, of course, involved the entire removal of the old interlocking plant—the largest in the world at the time it was built, only eight years previous—and also the removing of the power-house, which had been considered at the time of its erection, eight years before, to be sufficient for many years to come. The largely increased demands on the power-house also made it necessary to almost double the power to be provided, and it will be readily seen that improvements of the nature just described would be enormously expensive.

Space forbids any mention of the details of the new power-house, 2,750 horsepower, and only reference to the interlocking plant, which is the largest in the world, controlling as it does 67 double slips, 90 switches and 287 signals from the three towers. The central tower contains the largest machine, 45 feet long, the next largest being the one at Boston, 30 feet long. I understand that the Long Island Railroad has just installed a new interlocking machine, which is larger than the one at Boston, but not so large as the one at St. Louis. The complexity of the track layout is shown by the fact that there are 1,827 possible routes through this plant, lever 190-L alone controlling 146 movements. The system of electric annunciators by which the men in the tower are informed whether any tracks under the shed are occupied by any car or engine, and by which the trainmen get a high-speed signal from outlying towers, indicating that they may proceed at a high rate of speed to their destination in the train shed, the route being set up and the track clear, would be interesting if there were time to describe it, as well as the system of electric interconnection between the towers by which the co-operation of the operators in each of two towers is necessary to control signals at the point where the interlocking from the two towers unites.

Among the items especially interesting on account of the novelty of its application, may be mentioned Gray's telautograph, which is used for publishing and recording information from tower No. 1, five points in the system recording the arrival and departure of trains. This is, as its name implies, an electrical reproducing machine, which reproduces from one sending station the actual handwriting of the operator at as many duplicating stations as may be desired. Obviously, the current work of the station requires that many points be informed of the time and place of the arrival and departure of every train. The dispatchers on the property are located in tower No. 1, and they get advice by wire as soon as an approaching train reaches any one of the numerous Terminal junction points. That information is immediately published by the telautograph at the five points, namely, the station master's office, bureau of information, baggage master's office, baggage handling subway and the south end of the station, in order that everybody may be informed that, for example, Burlington train No. 8 is approaching and will arrive on track No. 17, 7.19 a. m.

This enables the bureau of information to tell the public when that train will arrive and on what track. It enables the station master to arrange his men to meet it. Enables the baggage master to send his trucks and men to the proper point, and allows the proper disposition of men and trucks in the subway for baggage, mail and express. This device is described in a pamphlet issued by the patent office and was on exhibition at the World's Fair. The United States Government makes use of it to enable a range finder, stationed some distance away, to communicate with the battery, as it fills all the requirements of this most exacting service. It makes errors—except initial errors of the sender—impossible. It is instantaneous, rapid, leaves an accurate record, and it can be operated by any one who can write. So far its application in the Union Station has given absolute satisfaction, and the derangements have been almost nothing.

Another interesting departure from ordinary methods is in the application of pneumatic tubes to the baggage service. The vast volume of baggage handled at the station made it impossible to concentrate the work of the checkmen, or of that portion of the public who must see the baggage themselves, as so great a bulk as that comprised by the great number of bulky packages must spread over a large territory. Under the old method of handling the baggage, the checkman in many cases must take the passenger's ticket and go hunt up trunks in whatever pile they might be located, which might be several hundred feet way, attach check and bring duplicate to the passenger; or the passenger might be required through some lack of identification to pick out his baggage himself.

Instead of trying to remedy this, the situation was accepted, and the separation of the checkman from the baggage was made final and complete. The baggage was taken into a subway constructed for the purpose across the south end of the train shed and delivered underneath the track from which it would finally leave, while the checkman was put in communication with an attendant stationed at the baggage by means of a pneumatic tube, which covered the intervening space separating the checkman from the baggage.

Study of the old conditions has also shown the long distance which the baggage had to be transported after it was checked, in order to reach the train. It was received in the old baggage house about opposite Walnut street, and had to be trucked on an average nearly 1,200 feet. Not only that, but it had to be trucked across tracks at grade, and as these tracks were often found occupied by long trains or by arriving trains or departing trains, close connection was continually being missed. Accidents were also common, the baggage trucks being run into by incoming trains. By means of the subway this trucking is cut down considerably and all dangers of collisions averted. It may be said that the plan was a success, and in many instances baggage under the new system was loaded on the train after being checked, before the passenger could walk from the checking counter and get on the train himself. The baggage was never so well handled as was the enormous volume of baggage handled during the fair, the number of pieces during that period being 1,739,000, as compared with 885,467 of the preceding year.

The large system of hydraulic elevators which raises or lowers the baggage between the subway and the train shed level is also interesting. The room that could be occupied by the platform was very limited, and the shape of the elevator platform was determined by the narrow train shed platform of which it must form a part. Therefore, in order to get the requisite area, dimensions of 5x19 feet were decided on for the elevator platforms. This allows a loaded truck to pass between the elevator and a train standing on an adjacent track on one side. Also, the elevator can be locked in the upper position, forming practically a continuation of the upper platform, and when locked in that position can not be raised or lowered from below until it is unlocked from above.

There are 37 of these elevators, 18 being for baggage along the north side of the subway, 17 for mail and express along the south side of the subway, and two for mail in what is known as the postoffice annex.

The system of subways radiates from the main subway, which is 100 feet wide and 600 feet long, and accessible for teams from both ends.

Only a very small proportion of the work done by the Terminal Association during the past three years has been referred to in the foregoing remarks, as even a summary statement or list of the things that have been done become wearisome. A few things, however, may be mentioned to illustrate what was involved in this undertaking.

There were built or rebuilt 138 miles of railroad track, including 23 steel bridges, requiring 23,825 cubic yards of concrete masonary, and 11,255 lineal feet of pile trestle, besides the strengthening of the Eads and Merchants bridges, which was a greater work than all the other bridge work combined. Thirteen new interlocking plants, with a total of 976 levers in the towers, have been built, and 39 miles of track have been equipped with automatic block signals. Twenty-seven buildings of brick, with concrete foundations, many of them very large, besides many small wooden buildings, have been built. Five electric transfer cables in three transfer pits have been installed. A large locomotive coaling plant has been constructed at Brooklyn shops, at which point a complete railroad shop plant has been constructed. Two large electric power-houses have been built and equipped complete. The construction of the subways, with an area of 103,000 square feet, required 20,000 cubic yards of masonry, and these have been lighted, drained and equipped for handling baggage, mail and express. The train shed of the Union Station has been extended southward 180 feet.

The time in which to complete the work of such magnitude was known to be very short when the work was undertaken. It must reach a state of approximate completion by the time of the opening of the fair, and this was accomplished, although in some instances the cost of the work was thereby greatly increased. The plans had to be decided upon without delay, and could not have the advantage which is obtained by continuous study and redesign when there is plenty of time in which to do it.

The work was also thrown into the winter months, and an illustration will show some of the difficulties encountered. In laying the track south of the train shed during last winter it was found that the ground was so frozen that it would have been almost as easy to pick away flint rock as it was to get through the frost. Therefore the expedient was adopted of spreading wooden trash and splinters over a large area of ground and burning it the night before, so that by morning the ground would be sufficiently thawed to enable men to pick it. A large proportion of the track in front of the station was laid by this means.

The facilities did not reach a stage of completion at which they would materially aid in handling the business until the spring of 1904. The results which were accomplished when the various improvements began to come into service can be seen by reference to traffic statistics. Among the most striking of these is the increase in passenger train movements from 7,427 in October, 1903, to 14,356 in October, 1904; increase in passenger cars handled in and out of the station from 37,421 October, 1903, to 77,731 October, 1904; increase in pieces of baggage handled from 141,584 in October, 1903, to 300,959 October, 1904.

This work had to be accomplished in the face of a heavy growing traffic. During the two years in which it was under way an average of about 1,100 passenger cars were daily handled through Union Station, and the enormous amount of switching to properly dispose of them with the limited facilities then at hand, and with the additional complication of handling daily hundreds of loaded and empty material cars, required 1,800 train movements daily in and out of the shed, with a total of about 25,000 daily lever movements on the interlocking machine. The old track arrangement, narrowing down into a four-track "throat," was, during the period of reconstruction, still further cut down, so that when the reconstruction work was at its height, in the month of December, 1903, there were but two leads into the station, one from the east and one from the west, on which to handle the traffic noted above. Furthermore, the entire space in front of the train shed was being excavated for the subway which was then being built.

The old track lay-out was constantly dwindling under the encroachments of the new, and the new was not available for service.

With the dwindling of the old track lay-out of course the old interlocking plant gradually went out of service, until finally only two or three old tracks were in use, and the old interlocking plant disappeared. Only those who were engaged in handling the traffic which was then to be continued over a few tracks by hand signals and by hand-throw switches, can realize what this meant. Many signal cabins were built at various places around the old tower, connected with it by various devices, such as telephones, signal bells, indicators, etc. Megaphones were pressed into service and a force of 110 switch tenders took the place of the old interlocking machine. The train directors still controlled the movement of trains through this territory, but, instead of accomplishing their will by the turning of a lever, they must communicate with a signal cabin, from which the information was passed by all sorts of devices and signals down the route desired, and a dozen men were engaged in lining up a route into and out of the station, which, with the interlocking machinery, one man could have done in a few seconds by the turning of a few levers. Trainmen entering the station were bewildered by the changes going on, and moved very carefully, getting hand signals from time to time along the route, so that all movements were slow. It is safe to say that the cost of the switch tenders alone during the few months of transition from the old plant to the new one was $75,000.

However, the transition to the new plant was made without a single collision or personal injury or any but the most trivial accidents.

As fast as the steel work was completed over the main subway the new tracks were connected up with the shed tracks, and the new system began to come into service. The first benefit began to be derived from it when the heavy switches in the new work were temporarily connected up with the pneumatic power. The switch tenders threw the switches back and forth by hand by turning on or off the air, temporary appliances taking the place of the regular electric appliances.

Meanwhile the great interlocking machine had been rushed from the East on passenger train and erected as rapidly as possible after the old interlocking machine had become useless. From that point on the rest was easy. As fast as the new track work progressed the threads of it were gathered to the great machine in the tower and the levermen began their beneficent work again. In this way the new plant gradually passed into service without a jar, and from time to time the congestion and delay grew less and less, until finally, as the work approached completion, it disappeared altogether.

Having thus given an outline, and at best a brief one, of the scope of the work undertaken, it is sufficient to say that the Terminal is at present equipped to handle, under ordinary circumstances, all freight business as rapidly as the lines which now connect with it are prepared to deliver and take it away.

Also that as far as the Union Station is concerned, the operating officials have estimated that they could have handled an increase of 40 per cent. of the passenger business that came to them during the World's Fair.—St. Louis Railway Club.

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Compound Locomotives, as Viewed in America

The American Engineer and Railroad Journal says:

"A true view of the standing of the compound locomotive in the United States was one thing difficult for the foreign delegates to the International Railway Congress to obtain, and after that meeting of distinguished railroad officials has passed into history one of the European delegates writes, asking: 'What, after all, is the opinion in America of the compound locomotive?' After thoughtful study of what was said in Washington, this delegate was in doubt, and addressed the question to this journal. The reply was as follows:

"Those who have used compound locomotives in this country may be classified roughly into four groups: (1) Those who appreciated compounding from the first, and have made a continual success in using the principle. (2) Those who expected too much of compounding and were not willing to aid in its development. These found improved fuel economy, but increased cost of repairs and increased number of road failures. They have nothing good to say of compounds. (3) Those who understood compounds, were willing to give them the care which all locomotives require, and who wanted the saving in fuel which the compounds rendered possible. (4) The fourth, and most important, class favor compounds because they provide increased capacity for work and enable the fireman to shovel more horse-power into the firebox. This class is helping in the development of design, and compounds are wanted because they will do work that can not be done by simple engines. These men realize that compounds are usually heavy, powerful engines, and that they require correspondingly increased care in maintenance, because they are large, and not because they are compounds."

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The Black River Tragedy

By Ida Marion Hubbell

Centreville was a railroad town, comprising about fifty houses, two general stores, a large railroad hotel and the railroad warehouses and general offices of the River and Mountain Divisions of the B., D. & W. Railway. The only thing very noticeable about Centreville was its railroad yard, where thirty tracks ran side by side, and where at night men new to railroading were almost distracted by the maze of red and green switch-lights.

The general offices and the shops gave work to a large force of men, and, for its size, Centreville furnished employment to more men, both in the mechanical and transportation departments, than any place for scores of miles around. Hardly an hour went by without some freight or passenger train pulling into the yards, and there was never a day that the tiresome switch engines did not puff and strain about the yards making up trains.

I was on the broad piazza of the railroad hotel, talking to Engineer Mallory's wife. She was my favorite of all the fair sex of Centreville, owing, perhaps, to the fact that she was seldom noticed by any one, not even her husband; and through sympathy I learned to like the pale, dark girl, who was but twenty.

Three years before I had come to Centreville with my mother and three pretty sisters—Rose, Violet and Mary. Reverses in fortune at home and the death of my beloved father had left me the only support of my mother and sisters. Mother and I had thought it best to come West, where work was more plentiful and advancement not so far in the future. I had obtained work in the railroad shops, but, though I had worked hard and faithfully, it seemed as though I would never get a better position.

One evening my sister Violet and I were up town and she insisted that I ask Mr. Harvey, the master mechanic, for a position in the train service. "I met him last night, and spoke to him of you, George," she said smilingly.

I saw Mr. Harvey, and at once was given a position firing a switch engine. Thereafter Harvey was a constant visitor at our house. He seemed to have caught the prevailing fever, love, which had carried off Will Mallory into matrimony only a month previously.

My mother and sisters had long planned a visit to Mrs. Mason, of the hotel, and at last they insisted that I should go with them. That evening I met Will Mallory's bonny bride.

Every one knew that Mallory and I hated each other, for I had given him a "thrashing" down in the yards for making a fool of me because I did not know just what to do and what different pieces of machinery were for. He had me rummaging the roundhouse for left-handed monkey wrenches, and I had hunted the shops over for round squares, until I was known to every man on the road as "Mr. Green of Green street," Green street being the street where I resided. All these things put together had been a just cause for grievance, I had thought, and had acted on that conviction. This evening was the first time he and I had spoken since our difficulty down in the yards.

Mallory's wife, I can safely say, was the most brilliant girl I had ever met. Her face was not handsome, but one to trust. I conversed with her quite a while that evening, and could plainly see from the conversation that she and her husband were an ill-mated couple.

That same evening I was introduced to Conductor Clayton's wife. She was strikingly handsome, and seemed a general favorite. She was a Mexican, and was called "Mex." by her friends. One could plainly see that Mrs. Clayton was "boss," for Charlie had long since ceased to oppose anything that Mrs. Charlie had set her heart upon.

I was startled from my reverie by Mrs. Mallory, who said: "George, isn't that Will with Charlie's wife? I do so wish he would let her alone, for I see that it troubles Charlie."

Every thought of Mrs. Mallory was for others. She had waited on the cold piazza for over an hour for Will to come from work, and had at last seen him chatting gaily with Mrs. Clayton. Not one word of complaint, but a bitter smile had curved her lip as she turned away to hide her tears. "Good night, George," she said as she hurried away.

"A penny for your thoughts, my lad," said a kind voice; "but I dare say they are pretty sour, for your face is as black as night. Did I interrupt a pleasant chat between you and Mrs. Mallory? Poor little Ines. She is not the girl she used to be, but—how could she be and live with that dog Mallory?" said Charlie Clayton kindly. There was not a man—leastwise a conductor—on our division loved by every one as was Charlie Clayton.

"Oh, by Jove! George, I must tell you what Harvey has done—sent old Casey over on the east end, and brought Jack Delaware back. He will be your engineer on my run," and he clapped his hand on my shoulder again. "But if Jack remains here I feel almost certain that Harvey will have a rival. But I know you'll like Jack. Ah, there he is now."

"Oh, Delaware! Jack!" shouted Charlie at the fellow just entering the office. He came over and was introduced to me. He shook my hand kindly, and said he knew that he and I would get along well together. We met Harvey, who took us up to his room, where we drank the health of the "Fairest, Rarest and Prettiest of All."

Charlie told me on the side that Mrs. Clayton had made arrangements with Will Mallory, so he would not interfere, and desired me to request Mrs. Mallory to come down to the hall, and said: "We'll try and make one evening just a little pleasant for poor, neglected Inez."

'Twas a genuine railroad dance, and prominent were two women that night. One was Inez Mallory, and the other Mrs. Clayton. Charlie and I played the dutiful to Inez, while at the other end of the hall Mallory flirted with Mrs. Clayton. Rose laughed and talked foolish nonsense with Conductor Casey, much to my dissatisfaction. Many were the ugly, dark looks I cast in her direction, for there was not a trainman in all Centreville that had as bad a reputation as Casey. But he had that easy way of making a person think that he was a model of politeness and chivalry. I was very much disappointed to think that Rose would talk to him after I had bidden her not to do so.

Charlie and I were both talking to Inez when who should come up but Mrs. Clayton, who said, in her pettish way: "Dear Georgie, I have known you so long, and you haven't asked me to dance once tonight." I answered that I was tired, for I could see Charlie's face flush with displeasure at her familiarity with me. Not that Charlie felt jealous, but he knew I thought her a little bold. She seated herself close beside me on the sofa, and declared my hands were dreadfully cold, after pressing her little warm ones over them. Perhaps I would have enjoyed her company had I not known she was Charlie's wife; but when I thought of him I excused myself and went back to Inez and Charlie. He surely was to be pitied with a women like Mrs. Clayton for a wife.

The dance broke up at last. I approached my sister Rose. Casey was holding her jacket. "Have you company?" I asked. "Certainly," she answered, with a defiant look. "Does Delaware take Violet home?" I asked again. "Certainly not. Harvey shouldn't be given the cold shoulder for that Delaware. Why, he's only an engineer."

"I am only a fireman. Good night, Rose. Tell mother I'll not be home tonight."

"Say, George, you are not going home tonight alone," said Delaware. "Harvey and Casey took your sisters home. I asked Violet for her company, but I guess I am not the fellow I was on the L. & W. I've really tried to be a better fellow, George, but the fellow that's liked by the boys for his 'try-to-do-right' way isn't liked by the girls. However, I thought you would rather I would take the girls home than Casey or Harvey. You must come up to my room and stay tonight, George, for we will not be together on the road many more times. You know you are to fire for Will Mallory awhile on the Black River Division."

"No, Jack; I'll not fire for Mallory. I'll fire for you or no one."

Harvey and I had grown to dislike each other. He seldom came to the house any more, for he saw that I was very much opposed to the attention he paid Violet. I had Jack Delaware picked out for Violet. Of course, I didn't say much, as Mrs. Clayton was visiting in Seattle, and Mallory and his wife had moved up into the mountains. Consequently, the girls had very little company. Of all my friends none were more welcome to me than Jack and Charlie.

Jack was of medium height, had light brown, curly hair, and deep brown eyes. He was proud, though never sarcastic or overbearing. He, being the best man with an engine on our division, was a general favorite with the firemen.

One day, while on the road, I received news that my mother was dead. That came as the worst blow of all. I think that blow made me more manly and independent—more like Jack Delaware.

Six months after that sad event Rose married Casey and Violet married Harvey. I did not stay for the weddings, as I never thought much of Harvey or Casey, and neither of them was the kind of a man that I would have chosen for my sisters. Then I knew that Jack Delaware could never be my brother, for there was only Mary left, and she could never make the ideal woman for Jack, for Jack would expect a great deal from the woman he loved well enough to marry.

Harvey and Casey were hardly back from their wedding tours when they were discharged. They left for the West at once, and I went back to the old home to bid the girls good-bye and Godspeed. Poor little Violet! I think she was almost sorry that she had not heeded my counsel. Harvey would have to go to running an engine, but I heard that the River Division gave him a very poor recommendation.

Already the heavy snows were melting on the mountains, and the tracks were covered with ice. Never yet in the history of our road had our tracks been so bad. Every day there would be a snowslide or a landslide on the Mountain Division, and a washout on the River Division was not uncommon. Death seemed to be reaping a harvest, and never a day went by without carrying off one or more of our best men.

In our rooms at the hotel, Jack, Charlie and I hovered over the fire, speaking of the men killed in the slide, or those in the washout, and the luckier ones at Centreville hospital.

One night, after Jack and I returned to our rooms after an unusually hard trip, Jack said:

"George, I guess you'll have to run with Will Mallory up to Cairo, on the River Division, for I refused to go out on the trip. Why, I'll not run on the River Division even if it is counted the best run, so Mallory will have to go, as he and I are the only ones that know the road.

"I'll tell you, George, up on the River Division, about eighty miles from here, is Black River. It was the wildest spot on earth, I believe, and the river is rightly named *Black* River. Ten years ago John Mason ran engine 223 and eight freight cars down there. Well, they just sank out of sight before help came. After that they put up a little one-horse telegraph station there. Near this station the river dashes off Dot's Mount and gushes and roars under that old wooden bridge. No, I'm not afraid of that," he said, "even if the 971 is the biggest engine on the road, and with heavy tonnage behind.

"George," he said, laying his arm on my shoulder, "it isn't that I'm afraid, but it is a promise that I made her—the girl in the telegraph office up there. She's only twenty—no, I guess she's a little over twenty now. I can't describe her to you, George, for she is not handsome like Mrs. Clayton, nor quite as homely as Inez—but she's as good as gold."

"Well, I'm surprised, Jack. I never knew you to speak of a girl in that way before. And who may her ladyship be?"

"She is a good girl, and if I had understood the circumstances as I do now, she would be my wife or at her home, instead of being away up on that dreary river. Indeed, she would not be a wife like Charlie's. God forbid that any woman should marry if she has no love for the man to whom she is engaged," continued Jack. "She had a friend, and that friend was Inez Gray, now Mrs. Mallory. Inez has forgotten me, but it was at her home that I first met sweet Hazel Hawley. I didn't love her at all then, but I flirted desperately with her. She loved me, unworthy as I was of so sweet and simple a love. I deceived her, George, made her think I loved her, when I did not, and then left her. But I was a reckless fellow then.

"Well, time passed, and my father died, leaving the plantation to my sister and ten thousand dollars of his hard earned money to me. I stayed off the road longer than I expected, and when I returned to headquarters I found I had lost my rights as an engineer on the L. & W.

"I saw a friend of mine and asked about Hazel Hawley. He said he had'nt seen her in a long time, as she had left home shortly after I went away. I soon left for Centreville, and was again running an engine on the Denver and Southwestern. I had resolved to find Hazel, for I knew that she loved me.

"One day I was sent out on an extra to Cairo, and we had to pass through Black Station. I started into the station to register, when I caught a glimpse of Hazel Hawley's sad face; then thought I had rather not meet her just then, and had the conductor register for me. When I reached Centreville I wrote her a letter, telling her that I was trying to reform and that I truly loved her, and asked her to be my wife. All the answer I received was a telegram from her, reading: 'Come to Black River on No. 4.'

"I summoned all my courage and went

immediately. I walked into the office. She evidently had not seen me get off the train, and was sitting alone, with her head on her hand, weeping. I don't think she ever seemed so beautiful to me as then. I walked up to her side, put my arm around her and kissed her. I do not know what I said, only that my pleadings were in vain.

"All she said was: 'No, Jack. You told me that before, and cruelly deceived me. I am so glad that you are doing better, Jack, and I think of you so often while I am alone here. But even if you never do love me, remember that far up in the forests of Black River is one who will always care for you. If in after years you learn to care for me sincerely and truly, you can then come for me, but do not come until then.'

"All my protestations were in vain, and although I truly did love her, George, she would not believe me. That is nearly two years ago, and maybe I will go up on the River Division tomorrow; and, George, I may not room with you much longer, for I'll not be here," and he smiled happily.

The next day Jack was called out to run a train on the River Division. He slapped me on the shoulder and with the same smile on his face signed his name on the board.

The track was soft and we could almost feel it slide from under us as we rolled along about thirty-five miles an hour, and as Jack said before, with heavy tonnage behind. At Conrad we received orders to lay over at Black River for No. 3, the westbound "Overland."

We reached the old wooden bridge, and below I could see the water foaming and dashing in torrents against the timbers. I glanced at Jack, and saw him looking ahead, for there by the depot stood the girl, Hazel. Just then the 971 gave a swerve and plunge. Wallace, the brakeman, jumped at the same time that I did, and we made the landing successfully. The 971 was again on safe track, but Mallory's train behind was pushing us pretty hard, when suddenly the bridge gave way and old 45 pulled our engine back down into the dashing waters beneath, with Jack still at his post.

The girl saw Jack go down, and with a wild cry she leaped over the brink into the water fifty feet below. I strained my eyes to try and see either Jack or the girl, when I saw Jack's head rise above the angry waters with something in his arms.

"My God, Wallace, it's the girl!" I rushed down to the water as near as I could get, and could almost reach Jack's coat, but the torrent swept him away. He rose again—my old friend Jack, my beloved engineer—and was still clasping the girl in his arms, but it was beyond human power to help them. Such a scene may I never witness again, for it haunted me night after night, while sitting alone in my room and Jack's.

Every one of the ill-fated crew were dead except Wallace and I. Forgetting that the little operator lay drowned in my engineer's arms, I rushed back to the depot. No one was there, and as I started back to the bridge I tripped over a book, and out fell a photograph. It was Jack's, taken perhaps three or four years before; a good likeness, only the mouth had a saucy smile which must have left him, for I never saw that smile but once —when I looked where his eyes rested only a few seconds before the disaster. I turned the photograph over, and there in penciled letters were the words, "With you, dearest Jack, I will live or die."

The tears gathered in my eyes, and I wept for my brave engineer, wept over his sad fate, then, dashing the tears away, I hurriedly joined Wallace, who had found the bodies of the conductor and fireman, but could not find Jack. I rushed madly down the river bank, and there before my eyes she lay on the foamy river pebbles, her head upon his breast, and his arm still holding her in a loving embrace. It was a sad meeting after nearly two years, but it told me Jack had learned to love her at last, and as the past could not be blotted out here on earth, they had together sought a land where it could, and the words on the photograph came back to me.

With the help of Wallace I carried them back to where the other victims lay, and they were taken back to Centreville. Every engine on the road was draped in black, for Jack and Mallory were two of the oldest men on our division, and Jack's death was mourned by many.

That was five years ago, and now I have the new engine numbered 971. I am not alone, as Jack thought I would be, for now I have a nice little home in Centreville, where happiness reigns supreme, and every evening when I come from my work I meet my Inez, my wife.

After a separation of two years Mrs. Clayton came back again to Charlie, a changed woman. She realized that admirers do not always sympathise like one who truly loves. Charlie is supremely happy, for in his home is a little boy who bears the name of Jack Le Roy Clayton, a big name, but a wee bit of a child, with its mother's beauty and Charlie's grace.

Often when the snow is on the mountains Inez and I will go over and see Charlie and Mrs. Clayton, and then we talk of days gone by and of him so loved by his fellow-men. Inez sent the long letter she wrote of Hazel's death to the proud old folks at home, and she told them of Jack Delaware and spoke of other days when she and Hazel were children together. Did Hazel's people think more kindly of Jack Delaware? Who can say but what if they had known him as we at Centreville knew him, there would be no bitterness in their hearts for Hazel Hawley's lover.

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A Novel Ride

By R. B. Buckham

We were seated about the fire, one evening after supper, talking. One of the chief delights of railroad men's lives is to thus gather together after the day's work is over and discuss at length matters in general and railroad affairs in particular. Someone is sure to have something of interest to relate, or some bit of information to impart which he has picked up from some book or magazine, and so the evening is passed pleasantly, often profitably. This is one of the satisfactions to be derived from a life consisting largely of toil and hardship, that it gives a bond of common interest among those whom it draws together, and something to look back to when it is past.

Joe, a veteran trackman from the West, had just related some of his experiences on the heavy grades of the mountains, when Alf. was reminded of an incident in his early career which he said had done more in forming his character than any which had occurred in years. It was as follows:

"Some years ago, I was employed as trackhand on the M. — R. R. I also took charge in a general way as janitor of a little way station on the line, seeing that it was swept clean, kept in order, and so on. One Sunday morning as I was sitting outside of this place on the platform in the sunshine, after doing a bit of sweeping, of a sudden a kindly, good-looking gentleman, dressed in black, walked up, and asked if I knew of any way in which he could get to Burton. Now that was the next town, thirty-five miles down the track, and as no train ran on this division on Sunday, I was obliged to tell him that I did not.

"At this he seemed much disappointed. 'Are there no freights passing this way to-day on which I could get a lift, or could you not lend me a handcar to go down with? It is very important that I should get there this morning, and I am unable to get any conveyance to take me.'

"Now, his speaking of the handcar reminded me of a possible way out of his difficulty, if he cared to take the chances of its being a success. Only a few evenings before, one of our number had been giving us a curious account of things as they were in the early days in railroading, long ago, which he had been reading about in a book. He said that when the railroad was first introduced, the thing was to get a motive power to move the cars along the rails. A number of plans were suggested, and one was that they be equipped with sails and propelled by the wind, and that this was actually tried in early times on the B. & O. R. R., but without much success.

"You see, I had a push handcar for moving rails from place to place, and, as the track was as straight as an arrow almost all the way to Burton and the wind blowing furiously from the south, just the right quarter, in an instant it occurred to me that I might rig up a sail and try the old B. & O. idea, to get him out of his fix, but that was all I could do.

"He agreed to my proposition, after some hesitation, as being his only hope of accomplishing his desire, and we were soon hard at work rigging the handcar with a great square sail made of a pair of blankets, and when at length our arrangements had been completed he steadied the mast and hung to the rope while I started the car down the tracks. After getting it to going as fast as I could by pushing behind on the run, I leaped aboard and we began our novel journey.

"The fierce wind tugged at the sail and flapped it wildly about, but my companion hung to it well, and gradually we began to gain headway. The track was a bit down grade in places, which was just so much in our favor, and we were soon bowling down the rails at as rapid a pace as could be desired.

"'Well, well, I declare! This is a success and no mistake!' exclaimed my associate enthusiastically, as the mast swayed to and fro under the tugging, billowing sail, and the trees and fences and telegraph poles began to fly past us, faster and faster, every moment. Every now and then he would turn to me with anxious, questioning look, his face pale and hair streaming, while he would remark, 'You are sure that we won't get into trouble, aren't you? We're not likely to meet an extra, or get thrown from a bridge or culvert?' But I had my hand on the brake, though perhaps he did not know it, and felt secure from danger.

"It was not long before the outline of the Burton station could be seen in the distance, growing larger every moment as we drew nearer, until at last we lowered our sail and slid abreast of it, while I applied the brake firmly, to bring us to a stop. My passenger proved by no means fastidious, but lent a willing hand in assisting me to remove the car from the track and stow it away behind the station.

"'Come, my man,' he then exclaimed, 'you have not inquired as to my purpose in coming here, and so I have not told you, as yet; but I am to preach at the village church to-day, and that is why I was so anxious to get here. Come along with me, won't you?'

"Well, I must confess that I had taken a sort of fancy to my new-found friend already, and so I finally went with him. That was the first time I had been to church for years, and something about it caused me to think of the old homestead, and my childhood days, and made me feel at home again. That is why, from that day to this, I have been a regular attendant on church services; and I think that I am a better man, at least a happier one, for my novel ride, 'voyage,' I sometimes call it, down the rails that day."

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Friends

O what were art if two might never look,
Or glowing morn if none were ever nigh?
O what were wine if only one partook,
Or music if it turned not eye to eye?
O what were life unshared of other' woes;
O what were death if it were not to part?
What e'en the scented beauty of the rose,
Whose perfume breathes no message of the heart?
All, all are one, as leaves that ripe and fall;
In each we learn the part that is divine
Till tottering age hath made us friend of all—
Praise thou thy friend and thou art praising mine.

—Charles D. Stewart.

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Discussion of Current Topics

Important Step By Locomotive Engineers and Firemen in Great Britain and Ireland.

Through the courtesy of Mr. E. S. Spencer, of Liverpool, Eng., a locomotive engineer, or "driver," as engineers are known in that country, the Magazine is in receipt of a most interesting and extensive report in pamphlet form of a conference held during the month of April last at Leeds by the representatives of the two sections or elements of organized men in engine service on the railways of Great Britain and Ireland, viz., the "Associated Society of Locomotive Engineers and Firemen" and the "Locomotive Members of the Amalgamated Society of Railway Servants." It will be interesting to know that there are in the British Isles these two distinct railroad organizations, both of which represent enginemen, one, as above stated, being entitled the Associated Society of Locomotive Engineers and Firemen, consisting of 12,000 members and admitting enginemen, exclusively, and the other the Amalgamated Society of Railway Servants, which includes railway wage earners of all classes.

In the past more or less estrangement has prevailed between the enginemen connected with these different organizations, but that this sentiment is giving way to better feeling is evidenced from the fact that delegates from the enginemen holding membership in the Associated Society of Locomotive Engineers and Firemen have met in the conference above referred to with delegates representing the locomotive members of the Amalgamated Society of Railway Servants, for the purpose of compiling a schedule of grievances for the entire kingdom, which they term a "National Program," and which contains demands for concessions calculated to materially advance their well-being.

The discussion incident to the gathering discloses some very interesting facts relative to conditions at present governing the employment of enginemen in Great Britain and Ireland.

While the conference concluded to seek a moderate increase in wages for both engineers and firemen, a reduction in the daily hours of work was decided upon as the main reform for which to contend. The discussion on this point brought out the fact that in Scotland the legal work day for enginemen is twelve hours, while in England it is but ten, and it was consequently decided that the question of reduction of hours for enginemen in both countries be considered separately.

The sentiment prevailed that it would be better to seek the establishment of an eight-hour day in England and a ten-hour day in Scotland than a universal eight-hour day for both countries, the difficulty being anticipated of securing a reduction for the Scottish enginemen of four hours per day.

As evidence of the standing which the industrial conditions prevailing on American railroads occupy in the estimation of practical railway men in England, the following is quoted from the report of the conference:

"Mr. Rimmer (delegate from Wigan) said he thought it was necessary that they should locate the causes of the conditions under which they were at present suffering. He submitted that the railway companies were not altogether compelled to introduce the improvements they were now making from pecuniary motives, such as increased dividends, or by keeping the dividends up to high-water mark. They must not lose sight of the general public, who required that they must be moving. It was frequently said that we were considerably behind other countries in the way of railway traveling, and that it was borne out by facts that we were considerably behind America. Many railway companies had sent officials to America to get ideas, with a view of having them adopted in this country. They must acknowledge that in connection with railway life, as with other forms of life, whatever they might be, that there was no such thing as standing still. They must either make progress or die altogether. Those improvements were necessary on the railways, whether they agreed with them or not. It would, therefore, be much better if they endeavored to so fit themselves into the circumstances with the view of the general improvement of the country, rather than be wedded to their pettifogging ideas. They were members of communities and citizens of the Empire, and they should endeavor to agree with the improvements necessary, and loyally try to get good results from them; but at the same time they should have sufficient stamina and manhood to say, 'You are not going to overlook us in the matter and we will have consideration.' It was consequently necessary that those who were manipulating those improvements—which were increasing their strain and shortening life—should be recognized, if not by greater wages, at all events by obtaining greater leisure, so that a man might have more opportunities of improving his mind. Upon that principle he wished to move the following resolution:

" 'That this conference of locomotive men, comprising representatives from all the railways in the United Kingdom, emphasizes its opinion that in consequence of the great physical strain placed upon men by the demand of the public for increased facilities in railway traveling, together with changes that are absolutely necessary in communal and commercial life, as evidenced by the silent revolution taking place upon our railways, we claim that the conditions under which we work call for immediate revision and a curtailment of the hours worked per day.'

"Mr. Hales (delegate King's Cross) seconded on the general principle that the locomotive men of the United Kingdom had not advanced either in hours or wages in proportion to the responsibility imposed upon them during the last five years. A chairman [Meaning a railroad official.—Ed.] of one of the great trunk lines said not much more than six months ago that he had never yet had the largest engine built but he found men to man it. That might be true. If the companies were going to adopt the American up-to-date principle, why should they not give them something of the American up-to-date wage and mileage, and something of the American hours? If the railways were to be Americanized, it was not for them to say they were not to be, but let them raise their position, not as fourth-rate men, but on an equality, on the principle of 'each for all and all for each,' in the United Kingdom. His idea in seconding that resolution was that in England, Ireland, Scotland and Wales they should rise as one man and make a supreme effort in unlifting the dignity of their labor. They had been down-trodden too much during the last five years, and the best organizing secretaries [Meaning railroad officials.—Ed.] they had were the tyrants who were put in authority over them. Those men had little respect for locomotive men and little for themselves, but he would implore locomotive men to respect themselves, and just as they recognized that all men were brethren and upheld the dignity of labor they might depend upon it, it would be the better for them all. He hoped they would unanimously support that resolution."

Mr. Rimmer's resolution, after lengthy debate, was carried unanimously.

The main reason why an increase in wages was not more vigorously contended for is that at the present time the United Kingdom is suffering from an industrial depression which has prevailed more or less ever since the conclusion of the Boer War. It is a source of much gratification to note the determined and united efforts being put forth by the enginemen of the British Isles for the improvement of their condition, and the Magazine heartily wishes them unqualified success in securing every concession they are seeking.

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Church and Labor.

The recent action of the General Assembly of the Presbyterian Church in the United States in creating a new "Church and Labor" department, representing over 7,000 ministers and over 1,000,000 members, can be accepted as another evidence of the extent to which the wage earners through organized effort have succeeded in bringing their cause to the attention and consideration of men engaged exclusively in religious and professional walks of life. It is also an evidence of the extent to which the world outside of labor circles is beginning to appreciate what an important factor the working man constitutes in the construction of the body politic and economic, and the necessity of assisting in the advancement of his interests in the belief that society in general will be proportionately benefited thereby.

The various Christian churches on the North American continent possess a most powerful influence in almost every element of society, which, if exerted universally and determinedly, with a view to the improvement of unfair conditions of employment and to the establishment of pleasant and healthful surroundings in the home life of those suffering through such conditions, would add materially to the effectiveness of the great work in which they are engaged. It would certainly very naturally tend to inspire with greater confidence in their teachings those who suffer most as a direct result of that inhumanity, avarice and heartlessness which constitute their very antithesis, as well as the predominant characteristics of many who, for ulterior motives, like to pose as interested church attendants and workers.

When all churches take an active part in establishing such a condition of affairs as will make their doctrines the actuating motives of the every-day life of their members they will have made a wonderful stride in bringing humanity closer to those ideals that exist in their professions.

In establishing a department of Church and Labor the General Assembly of the Presbyterian Church gives hopeful indications of an awakening tendency in this direction, as is more plainly evidenced by the following extract from resolutions adopted by that body when the said department was created:

"Appreciating the increasing importance of the industrial problem and realizing that the labor question is fundamentally and morally a religious question, and that it will never be settled upon any other basis, we recommend that the Presbyterian Home Mission Committees appoint subcommittees for the purpose of making a systematic study of the entire problem in their respective localities."

It is worthy of note and evidence of excellent judgment that the man appointed to the superintendency of this department, Mr. Charles Stelzle, of Chicago, is a member of the International Association of Machinists.

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Which Should Win?

The presence of the union label on the product of a factory is always a sure guarantee that clean, sanitary and wholesome conditions surround its manufacture; also that the men employed in that factory are being paid satisfactory wages, work a reasonable number of hours daily, and are surrounded with such general conditions in their employment as are calculated to preserve their health, increase their happiness and permit of their general moral and material advancement.

Where the union label is not used on a product it is at best only a mere chance if conditions of this kind prevail in the factory where such product is manufactured.

In pleasing contrast with the rabid and semi-insane howlings of one of their competitors in the cereal food manufacturing business is the attitude of the Egg-O-See Company, of Quincy, Ill. While C. W. Post, of Battle Creek, Mich., manufacturer of products known as "Postum" and "Grape Nuts," is indulging in vigorous denunciations of organized labor and boastingly declaring through the public press in so-called "Proclamations of Freedom" and other utterances, that he "will not bow to the comic opera kings and potentates of labor unions or allow them to unionize his factories," etc., the Egg-O-See Company, known also as the Battle Creek Breakfast Food Company, Limited, maintains the most pleasant relations with union labor. Its immense factories are organized throughout and union men employed in them exclusively. The union label is to be found on every package of Egg-O-See. The Quincy Labor News is authority for the statement that the gentlemen constituting the management of the Egg-O-See Cereal Company stand in the front ranks of manufacturers in their line, that they are broad-minded men who take pleasure in recognizing and encouraging the organization and advancement of labor, and that they take special pains to surround their employes with the most desirable industrial conditions practicable; also, that they appreciate the value of loyal co-operation on the part of their operatives and realize that one of the greatest contributing factors to success is an intelligent, well-paid and satisfied corps of employes.

C. W. Post, the blatant manufacturer of Postum and Grape Nuts, has defiantly thrown down the gauntlet to organized labor, and has openly challenged it to a finish fight. Since the publication of his diatribes against unionism have commenced and his identity as an antagonist of the toilers has become established, the product of his concern has no doubt become vastly more palatable to the enemies of organized labor than it has ever been heretofore, and they will, it is safe to say, put forth special effort to endorse Mr. Post's sentiments by promoting in every possible way the sale of these articles. In this connection it may be well to state that notwithstanding attempted antiboycott legislation and profound opinions on the subject rendered by jurists in accordance with their own desires in the premises, the members of organized labor as well as all friends of the movement have a perfect right to spend their money in purchasing any commodity that they may see fit, and they have also a perfect right to refrain from purchasing any commodity that they do not, for any reason, care to buy. Where, for instance, a restaurant or grocery is selling a product that is manufactured under unfair conditions, it is certainly the unquestionable privilege of railroad men or any other class of wage-earners or citizens so disposed to refrain from patronizing that particular restaurant or grocery as long as that particular class of food is used in its business. It is now to be demonstrated whether or not a manufacturing concern can profitably advertise its goods in connection with vicious attacks upon organized labor, particularly in the face of the fact that there is a competing concern manufacturing the same class of goods which, since its organization, has always coöperated in upholding the principles of unionism. It should be borne in mind bv all advocates of a square deal for wage-earners that Egg-O-See is a high-class cereal food, packed in an inner-lined, germ-proof package, and that its use is conducive not only to economy and health, but as well an endorsement of a company that is absolutely just and fair in its treatment of its employes.

The fact that this product is manufactuerd by the Battle Creek Breakfast Food Company, Limited, and that C. W. Post's Postum and Grape Nuts establishment is located at Battle Creek also, may be misleading and confusing. It is therefore well to state that the Battle Creek Breakfast Food Company (the manufacturers of Egg-O-See) has factories both at Battle Creek, Mich., and Quincy, Ill., and that great business success has thus far attended their friendly relations with organized labor.

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Industrial Notes.

Current advices state:

That the Secretary of Commerce and Labor has issued a circular announcing the prohibition of convict labor on any federal contract.

That steps are being taken to organize the workers in Tasmania and unite existing organizations in one body. With this object in view the Tasmania Workers' Association has been formed.

That at a political meeting held in London, Ont., recently, the newly-appointed Minister of Public Works, C. Sherman, declared that every employe charged with committing an infraction of the alien labor act will be deported.

That the unemployed workmen's bill, introduced in the British House of Commons recently, proposes to establish local bodies in London for the purpose of discriminating among applicants, and also a central body which alone will be empowered to provide employment exclusively on a farm colony.

That in Finland the women of the lower classes perform labor that in other countries is usually assigned to men. They wheel handcarts and barrows containing heavy burdens. They also sweep the streets, act as boatmen, and even assist in loading ships.

That at the present time the New Zealand Government is employing 4,018 artisans and laborers in government co-operative works.

That the Sydney (New South Wales) Labor Council recently passed the following resolution: "That the principle of trades unionism is outraged if a union member accepts employment at any other trade unless he become a member of the union of that calling."

Contributed

*Fourth Annual Report, Legislative Board, B. of L. F., of the State of New York.**

ALBANY, N. Y., March 22, 1905.

To the Officers, Members, and Legislative Representatives of the Several Lodges, Brotherhood of Locomotive Firemen, State of New York:

DEAR SIRS AND BROTHERS.—Enclosed find Assembly Bill No. 1501, introduced by Mr. Sullivan, "An Act to amend the labor law, relative to the time when wages are to be paid."

Also Bill No. 1532, introduced by Mr. Moreland, "An Act to amend section forty-two, article two, of the railroad law in reference to persons employed."

Assembly Bill No. 1532 was introduced by Mr. Moreland, by request of the representative of the Brotherhood of Locomotive Engineers. This bill should be given careful consideration.

Trusting you will take prompt action on the enclosed bills, and advise us of the same, we remain,

Yours fraternally,

R. E. QUIRK,
Chairman.

THOMAS E. RYAN,
Secretary.

Note.—Both of the above-mentioned bills died in committee. At our request Mr. Moreland did not move his bill No. 1532.

ALBANY, February 16, 1905.

Lodges 149, 155 and 291, Brotherhood of Locomotive Firemen:

DEAR SIRS AND BROTHERS.—Enclosed find Assembly Bill No. 617, introduced by Mr. McKeown, "An Act to require an additional motorman on the motor car of each train operated in subway in the city of New York."

Please advise any action you wish your representatives to take on this bill as soon as convenient.

Yours fraternally,

R. E. QUIRK,
Chairman.

T. E. RYAN,
Secretary.

Note.—This bill died in committee.

On February 16th we sent a copy of Senate Bill No. 306, introduced by Mr. Armstrong, which was "An Act to amend the insurance law, relative to mutual benefit fraternities." In this bill there was several provisions that would affect our Brotherhood, and in all probability cause us a great deal of trouble. We might say here that nearly every organization of a fraternal nature in the State was here in opposition to this measure. We joined these forces and, while amendments were suggested and introduced, the bill died in committee. This comprises most of the bills having a direct bearing on our membership in the State. A great number of bills affecting labor in general, too numerous to mention, has received our attention; some of these were no doubt intended to assist their sponsors to get under cover for some cause or other, but few, if any, were ever intended for passage.

It is not possible for your committee to give the standing of the Legislature as far as their friendliness toward our cause goes. No real bill in our interest was ever advanced far enough to enable us to get or force a test vote, which would show us conclusively their position, as a whole. The members of both Houses, at this session were anything but anxious to assist or show friendliness towards organized labor. There are a few, however, who have shown themselves fair, the only way out of doing an injustice to some one, is to place them all in the same category. The vote on reconsideration on the boiler bill is not to be taken as conclusive of the friendliness of those who supported us. While some of them, Senators Barnes and Marks, specially, were honest, many of the others evidently expected the bill would be defeated on final passage. At this session we have given everything possible to the men belonging to the majority faction of the power politically, in order that they may show their hand. The result is less satisfactory than ever. They have failed completely to make good, and hence our advice in the opening of our report.

The boiler bill, a compromise in itself, is really all that we can say that passed both Houses. It has been signed by the Governor and is now a law, and while not as good as expected, is a step in the right direction. Your thoughts and energies should be directed to the fact that at this session we worked together; there was no division among the labor forces represented here. We were agreed upon the main features. Concentrating our efforts for the purpose of showing a united front, and still we are left without anything, not even being able to show how many legislators really would stand with us on a test vote. The recent decisions of our State courts and United States Supreme Courts, regarding the constitutionality of the different labor laws, should remind us that the time for serious reflections of the past, present and future, what shall become of us, as a class, if we continue the retrograding movement as illustrated in this report, and that can not fail of being observed by anyone who stops to think for a single moment. We are stronger numerically, financially and intellectually, better organized and equipped, and still going backward. Are we using the means which every citizen in our land is provided with, and do we take the interest that we should in our franchise and show by our suffrage that we are union men on election day as well as the other 364 days in the year? Do we give this question the serious consideration it deserves? Each of us will probably and truthfully say, No; for if we did, things that we are looking for, justice, fairness and equality before the law, would be meted out to us as our right and as a duty the law-making body would owe to itself and society, to give to us for protection of life, property and as a fitting recommendation to those who toil, and the preservation of the Commonwealth, that which the Creator intended should be ours and the Constitution of our land guarantees to every citizen.

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*Continued from August, 1905, Magazine.

Our letter addressed to the Convention of the Brotherhood of Locomotive Firemen, held at Buffalo, N. Y., in September, sets forth certain recommendations which after years of experience and thought we considered opportune. That august body took no definite position on it. We again take the same position. If we are to expect any success we must concentrate all our efforts on one single measure. We believe that a liability act for this State would give us more if properly drawn than anything else, and if it took ever so many years to accomplish, we would, if successful, have something worth having. Along national legislation lines we would suggest an act to regulate the hours a railway employe should work. The largest portion of railway workers spend more time at their work than any class of labor, and for the important duty they perform, they should work less. Let all of us strive to better our condition and elevate our calling; let us devote our spare moments to a study of our own interests. We pray you, one and all, to accept these statements in the spirit they are given. If you will weigh the question thoroughly you will agree with us.

As will be seen from the foregoing report, our most important bills never came out of committee, and, as the convention at Buffalo changed the date of our annual meeting, and realizing fully that if we were to expect any legislation in the coming session some new mode of procedure would be necessary. We also felt that some special effort should be made on the liability act, and a plan of action which would benefit us the most mapped out and the machinery set moving at once. Your board concluded to convene the executive board in order that their counsel and advice in the matter would be ascertained, and hence a call for the board was issued for the 11th of May. We will place everything possible at the command of the executive board and ask them to take such action as they deem advisable, and their deliberations or minutes as to what they think best will be printed in full in this report.

In conclusion, your Chairman wishes to say that he was called away on the 15th of March by the Grand Master, to look after some matters of importance, and did not return until the 22d. Thanking you for kindness and consideration shown and wishing you prosperity and success.

Fraternally yours,
R. E. Quirk,
Chairman.

Thomas E. Ryan,
Secretary.

Executive Board Report.

Executive Board of the Legislative Board of the Brotherhood of Locomotive Firemen of New York State convened at Globe Hotel, Albany, at 10 a. m., May 11, 1905, Brothers Quirk, Ryan, Dobbs, Hanvey, Service, Chase and Riddick being present, Chairman Dobbs presiding.

Brother Quirk read the report of the Chairman and Secretary of the work done by them during the past legislative session; also the correspondence between the several lodges and Legislative Board, and correspondence between the various lodges and their representatives in the

Legislature. The subjects treated and acted upon being the Liability and Boiler Inspection bills, also Semi-Monthly Pay bill, and a bill to regulate the term of employment as fireman previous to promotion to position as locomotive engineers.

Adjourned at 1.30 p. m.

Board reconvened at 3 p. m.

By invitation Judge John T. McDonough addressed the Board in regard to drafting a liability bill.

Judge McDonough offered the services of the firm of McDonough & Danaher to draft a liability bill and appear for the same and transact any other business in which we might be interested at the coming session of the Legislature, the compensation for said services to be $500.

Motion made by Brother Hanvey and seconded by Brother Chase, that McDonough & Danaher be retained to draft a liability bill and transact such other business as may come up. Carried.

Motion made by Brother Riddick and seconded by Brother Hanvey that Brother Ryan buy a new Rotary Neostyle.

Moved by Brother Service and seconded by Brother Hanvey that the Secretary of the Legislative Board be authorized to contract with McDonough & Danaher to draft a liability bill, and that the said firm shall render such other services as may be necessary in consideration of the sum of $500. Carried.

There being no further business the board adjourned at 8:45 p. m.

CHARLES G. RIDDICK,
Secretary.
H. H. DOBBS,
D. B. SERVICE,
W. D. CHASE,
H. P. HANVEY.

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Legislation.

I hope that every lodge in this State will take a hand in legislation. This is the time for workingmen to get together. There never was a time in our history when the workingman's vote will be needed as it will be in the next election. There is no way in which the workingman can be benefited more than by sending men to the Legislature who will enact laws that will benefit them. More can be done by legislation than by any other means, and I hope that every man in the B. of L. F. will give this matter his earnest consideration. MEMBER.

The Employe's First Duty.

Modern labor, in every department of life, is chiefly distinguished from that of former times by the intelligence which is being put into it. Hitherto we have heard a great deal about unskilled labor, but nowadays, for all practical purposes, there is no longer any such thing. All labor has become skilled, with the thought and painstaking which is now being devoted to it, as he will very soon discover who endeavors to compete with it on any other basis but this.

Formerly a large percentage of the workingmen of many classes were willing to drift along through life carelessly and thoughtlessly, paying little heed to their employment, and doing little to increase their dexterity at it. But now a complete change has taken place in this respect, and almost every man, no matter what his station in life, is looking for a chance to add to his usefulness and efficiency. This is a progressive and enterprising age, and its spirit has gotten hold of us all.

Perhaps this tendency of the times is showing itself nowhere more markedly than in the railroad world. Here it is seen on every hand so plainly that he who runs may read. And, be it said, to the credit of the higher officials of the roads that they are doing much to foster and encourage it.

It is a well known fact with the reader that the Pennsylvania Railroad gives prizes of a substantial character every year to the division superintendents who are able to show the best sections of roadbed, and so encourages the keenest possible competition and rivalry, with the result that its permanent way is in many respects a marvel of equipment and neatness. Not long since, as the writer was riding in one of the trains of the Boston and Maine Railroad, he was told by a conductor that he had just come from one of a series of lectures which were being given to employes of the road by competent and experienced physicians, on how to treat wounds and injuries, and what to do for the maimed, in case of accident or catastrophe. Surely this was a most excellent and commendable move on the part of the road, to encourage its men to be ambitious to add to their usefulness and serviceability!

It is a fact, which can not be too frequently and too pointedly brought to the attention of the employe, that his first duty, his one great and all important obligation, is to think and labor and plan and sacrifice for the best interests of the road in whose employ he serves as though they were his own—which, in fact, it is, to a much greater degree than he often realizes.

One who is accustomed to be much of the time in the law courts listening to the trial of cases, can not but be impressed with the extent to which the employer is held responsible for the acts and omissions of the employe. The obligation of the railway thus to answer for the conduct or misconduct of its representatives is something fairly overwhelming at first thought. Though in no way directly to blame at all, yet it must shoulder the blame and the loss and the consequences of the errors of its servants, to a large extent.

A few examples of the rigidity with which this rule is upheld and enforced may prove of interest. Leaving out of the question altogether the obligation which the road owes to those who are actually passengers upon its trains, or their servants accompanying them, for misconduct toward whom on the part of its employes, as the reader doubtless well knows, the road is held strictly accountable, even to strangers and those who have not yet entered its trains, it has its many responsibilities.

As is well known, the law requires the sounding of the whistle upon approaching a crossing, but in a case in Indiana not long since, the court held that in spite of that fact, if the engineer sound his whistle altogether too vigorously and so cause a horse to run away, the road is liable in damages. This seems almost like placing the railroad "between the devil and the deep sea;" as the engineer must whistle, or be liable under the law, but if he carries his obligation too far, then the road must pay the owner of the horse that is frightened the damages which result. But the court in rendering this decision said that, to be sure, the law required the statutory signal, but that "when the whistle is negligently and wantonly sounded, so that horses lawfully in the vicinity are caused to run off and injury is inflicted, the company is liable."

In another instance, in the State of Wisconsin, a party went to the ticket office and bought a ticket for his intended destination, which should have cost twenty cents. He handed the agent fifty cents and received his ticket, but only ten cents in change. A controversy arose, which came to hot words, and finally to blows; and the aggrieved passenger brought suit against the company in consequence. It endeavored to show, by way of defense, that the plaintiff was intoxicated at the time, and so in a quarrelsome mood, but the jury returned its verdict in favor of the latter, nevertheless, in a sum of two hundred dollars. In still another case, a ticket agent accused a woman of endeavoring to pass counterfeit money on him, and placing his hand on her shoulder, ordered her to remain until he could call a policeman. The railroad company was held liable for damages occasioned in this instance, too.

But the employe's main interest is, not in what he can do or not do without rendering his employers liable for his acts, but in what ways he can further their interests, and so win the commendation and good will of the public. To this one purpose he should give his thought and heart most constantly.

R. B. Buckham, LL.B.

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Miscellany

The Russo-Japanese Peace Conference.

As the Magazine goes to press the entire civilized world is anxiously awaiting the outcome of the peace negotiations now being conducted at Portsmouth, N. H., by the assembled plenipotentiaries of Japan and Russia, and hoping that they will result successfully. Some of the Japanese demands seem, on their face, to be unreasonable, but from the fact that differences between the participants in the present conference upon which it was feared they could not agree have already been taken up, discussed and settled, there is justification for the hope that peace will be the ultimate outcome of the meeting.

The substance of the terms submitted by Japan is as follows:

First—That Russia shall recognize Japan's "preponderant influence" in Korea, Japan pledging herself to observe Korea's territorial integrity, but to exercise the privilege of preserving order in the civil administration and of giving financial and military advice to the Emperor of the said country, and it is believed maintain the policy of the "open door."

Second—That both Russia and Japan evacuate Manchuria.

Third—The restoration in Manchuria of Chinese sovereignty and civil administration, same to be recognized by Japan as well as Russia.

Fourth—Mutual agreement to respect in the future "the territorial integrity and administrative entity" of China in Manchuria and the maintenance of the principle of equal opportunity for the commerce and industry of all nations, which, of course, means the "open door."

Fifth—The cession to Japan of the Russian island of Sakhalin (the Japs have already secured possession of said island by conquest).

Sixth—That Russia surrender to Japan the leases under which she holds from China the Liao Tung peninsula, which includes Port Arthur, Dalny and the Blonde and Elliott islands.

Seventh—That Russia surrender to China in a manner agreeable in all details to Japan the branch of the Chinese Eastern Railroad, which runs south from Harbin to Port Arthur and New Chwang, and also retrocede all privileges secured under the concession of 1898.

Eighth—That the Chinese concession to Russia secured by Mr. Rothstein and Prince Uhktomsky in 1896 by virtue of which the cut-off through Northern Manchuria was constructed to connect the Trans-Siberian and Ussuri railroads, so as to permit of the Chinese Eastern retaining possession of the line, be limited, provision being made for the substitution eventually of Chinese imperial police for Russian—"railroad guards."

Ninth—Reimbursement or indemnity for the cost of the war (reports of the amount, coming apparently from authentic sources, which the Japanese are credited with demanding by way of indemnity, vary to such an extent that there is nothing certain as to the actual figures). It is, however, believed to be in the neighborhood of $3,000,000,000.

Tenth—That all Russian warships at present interned in neutral Far Eastern waters be surrendered to Japan.

Eleventh—That Russian naval power in Pacific waters be materially limited.

Twelfth—That the Japanese be given the right to fish in waters of the Russian littarol between Vladivostok and the Bering Sea.

Of the foregoing all have been agreed to by the assembled plenipotentiaries with the exception of the Japanese demand for the payment of an indemnity, the cession of Sakhalin Island, the limitation of Russian naval armament in the Pacific and the surrender of the warships now interned in the Chinese, Philippine and American ports. It should be stated that up to this time article No. 7 has been agreed to only in principle, final action relative to details being for the present deferred. President Roosevelt's determined and heroic efforts in the matter of breaking the deadlock caused by the refusal of Russia to agree to the four propositions referred to are most commendable. Although he announced at the beginning of the negotiations that he would in no way participate or interfere in the proceedings of the conference and persistently maintained that attitude until failure was threatened, he has kept in communication with the great neutral powers of the world, with a view to taking steps in the event of such a crisis, entering into direct negotiations with King Edward, of England, and President Loubet, of France (the government of the former being the ally of Japan and of the latter that of Russia), for the purpose of bringing the influence of each to bear with the respective belligerent nations in urging the modification of any position either might assume that would terminate present peace possibilities.

The question of payment of indemnity and cession of territory by Russia is one which she regards as involving her honor and dignity as a nation, and she entered the peace negotiations with the announcement and apparent determination that she would absolutely decline to make any concessions of such a nature. Although her navy has been destroyed and her army has met with a succession of defeats at the hands of the Japanese, without having achieved what might be regarded as a single military success, she would seemingly rather suffer vastly greater losses by way of expenditures in continuing the war, with the possibility of ultimate decisive defeat and all its consequences, than to secure the establishment of a peace that would involve voluntary submission to these conditions, M. Witte, the Russian plenipotentiary-in-chief, having declared that "Russia will not pay a copek of tribute." Why Russia expects Japan to keep in the neighborhood of a hundred thousand Russian soldiers for a year or more as prisoners of war without being paid for their subsistence is not quite clear.

At the beginning of negotiations both parties to the conference declared themselves as being absolutely opposed to the arbitration of any points upon which they might be unable to agree. President Roosevelt, however, realizing that the negotiations had about reached the point of being broken off, summoned one of the Russian plenipotentiaries, Baron Rosen, to a conference, wherein he suggested the advisability of submitting to arbitration all differences failing of adjustment in the conference. This step President Roosevelt was entitled to take with good grace by virtue of the fact that Baron Rosen, while one of the peace envoys is also the Russian ambassador at Washington, it being perfectly proper for the President at any time to summon him to a conference, by virtue of his being Russia's accredited representative to this country. The superior diplomacy of the President's step in suggesting arbitration through Baron Rosen to Emperor Nicholas can be the better appreciated when it is considered that Emperor Nicholas was the author of the The Hague Peace Conference, which had for its object the adjustment of all international differences by arbitration and the absolute discontinuance of war. Besides this, the President knew that the nation deciding to yield to his suggestion of arbitration would command the sympathy of the public opinion of the entire world and that its opponent would, therefore, be slow in rejecting the proposition. If, on President Roosevelt's advice, Emperor Nicholas agrees to submit those questions standing in the way of immediate peace to arbitration, it is more than probable that Japan will acquiesce, regardless of her declaration to the contrary prior to the opening of peace negotiations, at least it would be somewhat inconsistent with her characteristic tact to run the risk of yielding to her adversary the credit of agreeing to arbitration and incur for herself the alienation of friendship which would inevitably ensue from her refusal to do likewise.

Should the differences threatening a prolongation of the Russo-Japanese war be adjusted in this way, it would very materially advance the cause of arbitration, the ultimate establishment of which as a method of adjusting all differences is longed for by every living person of humane and fair-minded tendencies.

It is almost safe to assume that the Japanese are too proficient in the art of statesmanship and diplomacy to absolutely insist upon terms, the granting of which would seriously humiliate Russia and deeply wound her pride. One of the traditions of the government of the Czar is that it has never paid indemnity. While Russia has engaged in wars in the past in which her opponents have been successful, she has succeeded in evading such a condition to the reëstablishment of peace. Either the payment of unreasonable indemnity or the surrender of heretofore recognized Russian territory will, it is feared, if insisted upon by the Japanese representatives, result in a failure of the present peace conference.

The Russian army has been continually increased since the last serious encounter of the war, and is now in a better position to cope with the forces of Japan than it has been since the fighting first began. As a matter of fact, the Russian army has at no time been as numerically strong at the seat of war as has that of Japan, and it is very doubtful if any other European power could maintain such a fighting force and such a contest any better or as well as Russia has done at such an immense distance from its base of supplies.

If peace negotiations are successfully concluded there is but one thing to be regretted, and that is that those directly responsible for this war can not be compelled themselves to bear its cost. The Romanoffs, the reigning family of Russia, with its various dependencies and interdependencies, the bureaucracy and aristocratic element in general, who for ages past have been tyrannizing over the masses of the people of that country, are directly and exclusively responsible for that attitude maintained towards Japan by the Russian Government which inevitably precipitated the war.

The people of Russia had no grievance against Japan and absolutely no desire to go to war with that nation. They were opposed to such a step being taken, and had their wish in the premises been respected not a drop of blood, either Russian or Japanese, would have been spilled on the battlefields of Manchuria. Yet this is the element upon whom will fall most heavily the consequences of this unfortunate conflict. They will be compelled to bear either directly or indirectly the burden of whatever indemnity or reimbursement is paid to Japan, just as they have been compelled to furnish the fighting forces and to suffer all of the sorrows, the horrors and heartaches essentially incident to such a horrible event. But the Russian people are apparently awakening, and it is to be hoped that their emancipation is at hand, and that long ere another century rolls past they shall, by the exercise of the right to govern themselves, have succeeded in establishing for their country similar conditions of freedom of thought, freedom of speech, freedom of action, education, enlightenment and self-government that today makes the United States the greatest, grandest, most progressive and most prosperous nation on the face of the earth.

At the opening of hostilities the world seemed to question Japan's good judgment in engaging in a warfare involving her very existence as a nation with so great a power as Russia, but that most of her demands were reasonable and necessary to her future safety was generally recognized. Russia, through the exercise of dilatory and deceptive diplomatic tactics, by which she sought to secure sufficient time to complete her fortifications, increase her army, and otherwise strengthen her position in Manchuria, practically forced Japan to open the war. It is therefore only fair that Japan should be equitably indemnified for the financial losses she has sustained in conducting it.

Russia may possibly be brought to see the question in this light and pay Japan a sum of money by way of "reimbursement," rather than "indemnity." There is not as much humiliation or indignity in the adjustment of the financial phase of the present differences as if the Russian army had been completely routed, and while whatever sum is paid will amount to exactly the same to Japan whether paid as an "indemnity" or "reimbursement," the Japanese peace envoys have decided, with a view to saving the partially conquered foe as much humiliation as possible, to call it by the latter term.

The part which President Roosevelt has taken in advancing peace negotiations to their present status is an achievement of which every American should be and undoubtedly is proud. The peace envoys are here as the guests of the nation, and Americans are therefore doubly interested in the success of their efforts, first, because it will terminate deadly strife that means the destruction of human life and the desolation of homes, and, secondly, that their own country may have thereby been directly instrumental in stopping one of the bloodiest and most cruel wars in the history of the world, and may God grant, the last that it will ever see.

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The New Nevada.

This is the title of a most interesting booklet issued by the passenger department of the Southern Pacific Railroad Company and edited by A. J. Walls, of San Francisco. It contains an extensive and very intertesting account of industrial conditions in the great "Bonanza" State, dealing most thoroughly with agricultural development therein and the great system of irrigation which has been established in connection with it. It contains many excellent illustrations showing the methods of irrigation at present in use and many other very interesting scenes described in its reading matter.

In view of the active and extensive work being done at the present time by both the Federal Government and private concerns in reclaiming arid lands which heretofore have been considered valueless, and of the general interest existing all over the country in everything that pertains to the West, the contents of this little book, particularly that dealing with the work of irrigation, will prove of much general interest. Copies can be secured by writing to Mr. James Horshburg, Jr., 431 California street, San Francisco, Cal.

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Something of Chicago's Commerce.

In view of the extent to which Chicago is at present engaging public attention, the following from the Bureau of Statistics of the Department of Commerce and Labor will be interesting:

At Chicago receipts of live stock during April amounted to 1,205,967 head, being a very slight gain over like movements in 1903 or 1904. The different animals were received in the following numbers: Cattle, 236,664 head; calves, 54,097 head; hogs, 559,638 head; sheep, 341,653 head, and horses, 13,915 head. Total live-stock shipments for the month from this city were 414,272 head, in contrast with 360,631 head in 1904, and 228,668 head in 1903. The number of animals required for city use and consumption in April, 1905, totaled 791,695 head. During the first four months of the present year receipts of live stock at Chicago totaled 5,486,314 head, while a similar movement in 1904 amounted to 5,552,306 head, and in 1903 to 4,986,089 head. Shipments for the same periods were 1,707,982 head in 1905, 1,571,837 head in 1904, and 999,504 head in 1903. The shipments of packing-house products from Chicago during the month of April amounted to 175,057,414 pounds, in contrast with 189,011,485 pounds for a like month in 1904, and 163,251,384 pounds in 1903. For the four-month period similar shipments during the current year totaled 783,338,152 pounds, of which 9,937,400 pounds were beef, 44,252,400 pounds canned meats, 212,484,220 pounds cured meats, 343,556,324 pounds dressed beef, 10,028,100 pounds dressed hogs, 49,844,029 pounds hides, 104,606,079 pounds lard, and 8,629,600 pounds pork. The total shipments of packing-house products during the first four months of 1904 amounted to 861,960,522 pounds, while a similar movement in 1903 totaled 735,829,943 pounds.

During the month of April, grain arrivals at Chicago totaled 15,821,354 bushels, an amount approximately 6 million bushels more than that for a similar month in 1904, and over 5 million bushels heavier than that for 1903. Shipments for the month amounted to 14,530,504 bushels in 1905, 6,622,134 in 1904, and 14,346,642 bushels in 1903. The gains made during the present year, both with regard to receipts and shipments, were due almost entirely to a greatly increased corn movement, the low rates which generally prevailed, combined with an exceptionally heavy crop, having caused a very free movement of this grain. Arrivals of all cereals at Chicago during the first four months in 1905 aggregated 75,764,719 bushels, as against 62,855,262 bushels in 1904, and 67,374,862 bushels in 1903. As in the case of the monthly movement, increases shown for the present year were almost entirely due to a heavy inbound corn movement, the receipts of this cereal being over 15 million bushels heavier than those for a like period in either 1904 or 1903. Grain shipments from Chicago during the present year to April 29, amounted to 48,952,836 bushels, a movement over 11 million bushels heavier than that for 1904, but differing but little from similar withdrawals in 1903.

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Train Wrecking on the Increase.

That the laws of many, if not almost all, of the States and provinces of the North American continent are altogether too lenient with the train-wrecker is becoming more evident as time rolls by and railroad wrecks attributable to his fiendish work increase in number. It is difficult to regard as human a creature so diabolical as to wantonly destroy the life of a fellow being, or perhaps fifty or a hundred, it matters not to him how many, for the purpose of gratifying some base impulse, be his object either plunder, or revenge for some real or imaginary injury, for which perchance not even one of his victims may be in the most remote degree responsible.

Bandits who, for the purpose of robbing the occupants of a passenger train, will hold them and the crew in terror at the point of loaded firearms while securing their valuables, are, if captured, handled without gloves, and in several instances death has been their punishment, although in the commission of their crime no blood has been spilled. While the abhorrence and execration in which such criminals are held is thoroughly justifiable by the nature of their crimes, yet the element of mercy identified with their methods of operation makes their wrongdoing trivial in comparison with that of the depraved, merciless and black-hearted wretch who deliberately arranges for the wreck of a railroad train, and cares not how many horrible deaths may ensue as a consequence of the carrying out of his hellish design.

In the case of the professional train robber life is spared, as property or money only is wanted, and those who are deprived of their possessions are given a chance to meet their loved ones again, but the train-wrecker cares not how many homes he may leave desolate, how many hearts he may crush with hopeless sorrow or the number of widows and orphans to whom he may bring misery and want. He cares nothing for the piteous pleadings and heart-rending agonies of the passengers and trainmen, who, pinned in the burning wreck, are slowly roasted or scalded to death.

A prominent member of the Brotherhood, located in the South, in a personal letter to the Editor recently, gives the following account of the work of train-wreckers that has come to his personal attention on the lines with which he is identified:

"About three weeks ago, ten miles east of ———, a person of what character I will not undertake to state threw the switch, took the light off, it being night, and did it on the time of a fast passenger train. The passenger train was late and a freight running on her time got what was fixed up for the passenger. There could be no question about the matter. A train had passed over the switch just thirty minutes before the accident occurred. The train that was ditched was running thirty-five miles per hour. It cleared the switch, but about twenty car-lengths in the siding struck a curve and went end over end. The switch was not damaged in any manner, and its position showed how it had been turned and locked to send some one to their last sleep. The engineer was killed—not in a moment, but, being caught in the wreck, was able to talk to those who were trying to release him; but as soon as the pressure was taken off his body fell over dead. The fireman was hurled over the right of way and escaped serious injury.

"Again about two weeks ago, three hundred miles west of ———, on the worst curve we have, our Overland Express was wrecked in a manner worse than the foregoing. The demons who accomplished the work of destruction showed by the amount and nature of the work necessary to the carrying out of their plans the hellish diabolism which actuated them, as well as the cold deliberation and determination which characterized the commission of their crime. They took the spikes out of the ties for a rail-length on the inside, moved the rail in, and the engine when it struck that part of the track broke loose and went down the embankment a distance of 250 or 300 feet. The engineer was cut to pieces and the fireman scalded to death—both Brotherhood men. The train was dead on time and moving only at a speed of about ten miles per hour. Think of the additional horrors that would have been recorded if she had been a little late."

These two wrecks have, of course, already been classed in governmental statistics, and they will appear in the Interstate Commerce Commission's next annual report, swelling the number of "accidents" due to this cause by two, but to what extent will they serve to impel legislation, with a view to the abatement of this particular class of crime? It would seem as though train wrecking has become so common that horrors of this kind no longer attract general attention, and as matters of local interest only are comparatively soon forgotten. It is a question if the perpetrators of these horrible crimes will ever be apprehended.

But recently the management of a certain railroad company over whose lines President Roosevelt was traveling found it necessary to hastily change the route, on account of a plot to wreck his train becoming revealed to them, and took the precaution to divide it into two sections and send each in a roundabout way over small branch lines to point of destination.

Normal human nature is possessed of an instinct to save from death or injury the person of a fellow human being. First-degree murderers are executed upon the principle, not of legal revenge, but to protect society from a possible repetition of their crimes, as it is accepted that, having taken life once with premeditation, they have demonstrated such a base degeneracy as to render possible, if not probable, their repetition of the crime. A person who deliberately seeks to destroy life evinces the possession of a character so perverted and depraved as to justify society protecting itself against him.

The persistence and success with which the United States Government hunts down violators of federal statutes is a matter of general knowledge and approbation. Interstate railroads (and there are very few that are not interstate) are subject to federal regulation. Then why should there be any hesitancy on the part of Congress in enacting a law for the punishment of the train-wrecker sufficiently severe in its consequences to prove an effective deterrent to the future commission of this horrible crime?

If capital punishment is justifiable on any grounds, then who more richly deserves it than the cowardly assassin who will deliberately wreck a railroad train?

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Some Facts About Canada.[*]

Canada's center of population is near Ottawa, and is moving west.

Canada's western population 50 years ago, 8,000. Today it is estimated at 800,000.

Canada's western population is 75 per cent. British and Canadian born, 25 per cent. foreign born.

One out of every 3½ in Canada is of French descent.

Quebec Province has 1,322,115 of French descent and 290,000 British.

Ontario Province has 150,000 of French descent.

There are 10,000 of French descent in the Canadian west.

Density of population to square mile: Prince Edward Island, 51.6; Nova Scotia, 22.0; New Brunswick, 11.8; Ontario, 9.9; Quebec, 4.8; Manitoba, 3.9; British Columbia, 0.4.

Immigration Statistics.

Canada received 130,330 immigrants, fiscal year to June 30, 1904.

Canada has received half a million immigrants in nine years.

Canada received, in 1904, 50,374 from Great Britain, 45,171 from United States.

Sixty per cent. of the immigration of 1904 was agricultural in its character.

Seventy-five per cent. of the immigrants of 1904 speak English.

Canada paid $5.71 per head to bring in and locate the 1904 immigrants.

Canada will, it is estimated, receive 150,000 immigrants in 1905.

Each immigrant is estimated to be worth $1,000 to Canada.

167,000 Americans have come to Canada in the past seven years.

They brought, in cash and settlers' effects, 58 millions—$350 per head.

Twenty-seven different nationalities were represented in the foreign immigration of 1904.

Canada has 60,000 Galicians from Austria (including 7,729 arrived in 1904).

The Doukhobor migration of 8,000 from Russia to Canada in 1899 was the greatest exodus of a whole people ever known.

The Doukhobors earned, in 1903, $110,000 in railroad work and spent $300,000 in trade.

The Doukhobors have 422,700 acres in land, of which 180,000 have been taken up by them as homesteads.

Canada has 7,000 Mormons, 20,000 Mennonites, 20,000 Hungarians.

Canada has 20,000 Chinese and 3,612 Japanese.

Canada has received 165,000 British immigrants in the last nine years.

For every British immigrant in nine years there has been an American.

Sixty per cent. of total immigration for nine years has been English-speaking, 40 per cent. foreign.

The British immigration of 1904 increased 8,582 over 1903, the American decreased 4,302.

The immigration of 1904 was double that for 1902; treble that of 1899.

The Country's Commerce.

Canada's total volume of trade, year ending June, 1904, 464 millions; imports, 253 millions; exports, 211 millions.

An increase of 5 millions over 1903, and 50 millions over 1902.

Canada's volume of trade has more than doubled in ten years.

Canada's total revenue, year ending June, 1904, 70 millions.

Canada's revenue, 1870, 15 millions.

Canada's expenditure, 1904, 55 millions; 1870, 14 millions.

Canada's surplus for year ending June, 1904, 15 millions.

Increase in Canada's trade, 12 years, 1893 to 1904, 230 millions.

Since confederation the exports during 28 of the 38 years were greater to Great Britain than to the United States.

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[*] Continued from August, 1905, Magazine.

BROTHERHOOD OF
LOCOMOTIVE FIREMEN'S MAGAZINE

BROTHERHOOD DEPARTMENT

The Toronto Union Meeting.

The grand union meeting held at Toronto on August 8, 9 and 10, 1905, was one of the most successful that has ever taken place under the auspices of our Brotherhood. The entire program was carried through with unqualified success. In addition to an almost complete representation from Canada, a large number of delegates and visitors from the Ladies Society, as well as the Brotherhood, were in attendance from the United States. All departed for their homes not only much the better for the pleasures experienced and benefits derived as a result of their attendance, but with the justifiable conviction that the organization in general had profited materially as a result of this gathering.

Two secret sessions were held each day and questions of the most vital importance to the Brotherhood constituted subjects of discussion and mature deliberation. The courtesies extended by the public officials of Toronto and the sentiment of warm good will and welcome which were apparent everywhere was one of the many pleasing features of the event.

An interesting and memorable number of the program was the public meeting which was held in the Majestic Theater on the evening of August 8th. The audience, which included several hundred delegates and visitors from the Brotherhood and Ladies Society of both the United States and Canada, was enjoyably entertained, pending the opening of the exercises, by a most efficient orchestra. On the stage were gathered prominent public officials and officers of the Brotherhood. His worship, Mayor Urkuhart, was ably represented by Alderman J. J. Graham, who will be remembered as the gentleman who, acting as chairman of the reception committee of the Sixth Biennial Convention, welcomed the Grand Lodge to Toronto on that occasion.

Bro. W. J. Brent, Past Master, of Dominion Lodge 67, and chairman of the arrangement committee of the union meeting, presided and introduced as the first speaker, Mr. Graham, who welcomed the delegates and visitors in words of cordiality, the sincerity of which was thoroughly recognized and appreciated by all to whom they were addressed.

Hon. W. F. Maclean, who was next introduced by the chairman as a tried and true friend of railroad men, expressed the pleasure it gave him as a citizen of Toronto to welcome the representatives of the Brotherhood and Ladies Society to such a gathering as they were then attending. He referred with much gratification to the fact that in 1898 he had had a similar experience, which he assured them he would much like to again ere long enjoy. Mr. Maclean spoke in warm terms in behalf of the railroad men of South York. He said, realizing that there were many citizens of the United States present, it was a notable and most commendable fact that the two great English-speaking nations of the world were working together to perpetuate peace on earth, and dwelt upon the propriety of those who labored in the two countries working together along the line of solving the great social and economic problems which confronted humanity today. He referred with pleasure to the large proportion of railroad men in his constituency and expressed his high estimation of the value he placed upon their support. He said there was no reason why railroad men should not have a proper and efficient system of organization. No one questioned the principle, which, he said, was being freely accepted by the great railroad corporations. He dwelt upon the fact that progressive and remedial legislation was not being secured as rapidly as might be wished for, but that some good work had been affected, and that the legislative interests of organized labor were being gradually and steadily advanced. He referred to the great success attending railway progress in Canada at the present time, directing the attention of his audience to the two transcontinental lines now under construction, in addition to the two large railway systems already in operation in that country. Mr. Maclean concluded his remarks by repeating his welcome to the delegates and expressing the hope that they would enjoy themselves, and again ere long make Toronto the meeting place of another convention.

Grand Master John J. Hannahan, who followed Mr. Maclean, expressed the honor he felt in being the executive of an order with a membership of 56,000, and which was beyond doubt without a superior as a fraternal and labor organization. He referred to the fact that the President of the United States held membership in the ranks of the Brotherhood of Locomotive Firemen, and expressed the belief that King Edward himself would be also willing to join. He said that the Brotherhood was organized in 1873 for the purpose of protecting the interests of locomotive firemen, and that today the occupation was attracting men of nearly every calling in life by the advantages which it presented. He said men were going into the railway service because it paid better than so many other pursuits, and that the average fireman in the United States and Canada received better wages than the cashier in many of the banks of those countries. The Grand Master referred to the recent record-breaking time being made on railroads, and stated that the man who shoveled the coal on deck of the locomotives was responsible for its accomplishment, for without muscle and energy to generate the motive power, commerce and industry would come to a standstill. He dwelt upon the protective features of the organization, calling attention to the fact that membership can be granted only after nine months of actual service, and that it meant integrity, industry and standing. He contrasted the condition of affairs prevailing at the present time amongst railroad men with those existing many years ago, and showed how the organizations were responsible for the vast improvement. It once was, he said, that many railroad men were forced to lead lives of hardship and want, and when death overtook them be buried by private subscription, as the result of conditions which, through the instrumentality of the Brotherhood, are now nonexistent.

Bro. Hannahan dwelt upon the extensive area covered by the Brotherhood of Locomotive Firemen, declaring that it was established on every line in North America and was as complete as any such organization that ever existed; that it made for harmony, peace and good will and for the advancement of the interests of the employer as well as the employe. He forcibly expressed his conviction that it was the duty of railroad men to protect those interests from which they derive their subsistence and to oppose such legislation as would reduce the revenue the railroad companies were rightfully entitled to. In discussing the legislative feature of railroad men's interest he said that if all interested in the success of the railroad industry would stand together they could secure legislation of which they are badly in need. Figuring on the basis of the 42,000 plurality at the last election in Canada locomotive firemen, he said, were numerically strong enough to carry any election in the Dominion, and that if all branches of railroad employes stood together they could send whom they wished to Ottawa and secure those conditions for which they had been striving. He impressed upon his audience the pacific disposition of the Brotherhood, which, he said, never cared to resort to a strike if by any means possible an honorable and peaceable settlement could be secured. Continuing, he gave some interesting figures on the financial status of the organization, and dwelt at length upon its present sound fiscal standing, which, by the comparisons he made, were shown to be the best that the organization has ever attained to.

Upon the conclusion of Bro. Hannahan's remarks, Fourth Vice Grand Master E. A. Ball addressed the meeting. In his remarks Bro. Ball showed how the organization had succeeded in securing a fair day's wages for a fair day's work; how it fostered fraternal feeling and brought men together as friends and brothers who might otherwise have been strangers for life; how it banished estrangements and established good friendship wherever its banner had been raised. He referred to the high standing which has been reached by the Brotherhood in the estimation of the public in general, and the fact that its policy and methods were indorsed by the leading minds of the North American continent.

At the conclusion of his address Bro. Ball presented to Bro. C. A. Wilson, First Vice Grand Master, on behalf of Bro. Wilson's Toronto friends, a beautiful silver tea service, of which Bro. Wilson made an appropriate and graceful acknowledgement. He paid a tribute to the "grand, noble and practical" work being done by the Brotherhood, which, he said, was steadily growing in usefulness.

At the conclusion of Bro. Wilson's remarks Sister Cameron, President of the Toronto Ladies Society, addressed the meeting, and in very appropriate words extended the greetings of that body to the assembled delegates.

Mr. Alexander Champion, International Vice-President of the Machinists' Union, spoke on behalf of that organization. He delivered a most brilliant address, referring in the course of his remarks to the interdependence of organizations such as the Brotherhood of Locomotive Firemen and the one he represented, and of the benefit to be derived by all from mutual coöperation. Bro. Wilson responded to the remarks of Mr. Champion in his usual humorous and entertaining vein, expressing the hope that closer international ties would be created between labor organizations, so that a clash occurring in Canada would enlist the sympathy of a common cause in the United States.

While the discussion of the more serious and practical aims of the Brotherhood and the consideration of other important economic and industrial subjects occupied by far the greater time of the meeting, the proceedings were interspersed with song and story. The well-known artists, Leroy Kenney, Bert Harvey, Ruthven MacDonald and Mrs. Kleiser-Payne, contributing most substantially to the pleasures of the evening.

A trip on the lake on board the steamer "Chippewa" was an event thoroughly enjoyed and appreciated by all delegates and visitors.

The Grand Lodge was well represented, there being present, in addition to the Grand Master, two Vice Grand Masters—Bros. Wilson and Ball—and two members of the Grand Executive Board—its chairman, Bro. Kelly, and its secretary, Bro. Quirk.

So greatly were those present impressed with the success of this event that it was unanimously decided to hold a similar meeting a year hence, Ottawa being chosen as the place of assemblage.

Notice.

Any person having March, 1905, numbers on hand and of which he is willing to dispose will please notify the Editor and Manager, John F. McNamee, 806-7 Traction Terminal Building, Indianapolis, by postal card.

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The Toledo Joint Union Meeting.

A most hearty invitation is extended by the divisions and lodges of the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen, Order of Railway Conductors, Brotherhood of Railroad Trainmen and Brotherhood of Railway Clerks, of Toledo, to attend the Grand Union Meeting to be given under the united auspices of these organizations on Sunday, September 24, 1905.

All arrangements are now completed for this great gathering of organized railroad men.

There is nothing that has a greater tendency to promote the general welfare of men engaged in railroad service than an opportunity of this kind for mutual interchange of ideas and association, and there is nothing more effective in developing united effort for the protection of those common interests which mean so much to them in life and the promotion of which demands on their part uninterrupted coöperation and mutual good will.

All persons desiring to attend this meeting should make application for transportation to Toledo through their proper officials, and, inasmuch as it is to be held on the 24th of the present month, the earlier application is made the better will be the chances to receive it in proper time.

The Ladies Societies of Toledo have pledged their support and have made arrangements to do their full part in helping to entertain the visitors. Special arrangements will be made for accommodation of those desiring to stay over until Monday.

All in attendance at the great union meeting held in Toledo four years ago will remember what a splendid success it was and of its resultant benefits. In view of the fact that the railroad men of Toledo are even better organized today than they were then, it is predicted and expected by those having arrangements in charge that the coming meeting of Sunday, the 24th inst., will surpass it in every way.

Grand Lodge officers representing the various Brotherhoods will be in attendance and address both the public mass meeting to be held in the afternoon and the executive sessions to be held at night.

This gathering will be an event of the greatest importance to railroad men, and it is to be hoped that all who can possibly do so will arrange to attend, and by their presence assist in demonstrating the fact that the men employed on our great highways of commerce are fully alive to the necessity of standing together in the protection of their own interests and the defense of their rights. Those who can arrange to arrive on early trains in the forenoon will have an opportunity of visiting some of the many attractions of the beautiful and busy city of Toledo before the public meeting convenes.

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Board Meeting Elicits Public Comment.

The meeting of the Joint Protective Board of the Burlington System and its subsequent conference with the officials, together with incidents connected with and results attending it, has, on account of the conditions prevailing on that road in years past and still fresh in the minds of a large majority of railroal men, attracted more than the usual notice outside of railroad circles, as is evidenced by the attention given the incident in the columns of the press.

The Chicago Chronicle of July 30, 1905, refers to the matter as follows:

The Joint Protective Board of the Burlington Railway System, which met at the Lexington Hotel on June 6th, has just completed its labors. The Board was in session for six weeks, discussing the wage schedule for the present year, and adjourned, it was said, having adjusted all the differences between the employers and employes without any serious trouble.

So quietly did this organization of locomotive firemen attend to their business during this meeting that few guests of the hotel were aware of its presence. The members were in the halls, in the restaurants and everywhere in the hotel, but neither by word nor act did they disclose their identity or the object of their mission.

The impression this Board made on those familiar with its work was that if labor unions and officials of corporations met in the same friendly spirit that actuated this body and the representatives of the company, that the millennium in the labor world would be at hand and that strikes and their attendant riots would be at an end.

The Board, after completing its schedule, met in conference for several days with the officials of the Burlington. The schedule was thoroughly discussed and the arguments were sometimes exciting, as might have been expected. However, it was clear sailing from the start, when Mr. Willard, Second Vice-President of the Burlington System, said: "I am not opposed to labor unions, and I was a member of one myself. I was a member of the Brotherhood of Locomotive Engineers before any of you men were here. I am familiar with most of the questions that bring you here."

This remark was followed, in an equally generous spirit, by N. C. Allen, Chairman of the Board, who said: "We have been fair both to ourselves and to the company and followed the policy of our organization along the line of conservatism. We think that after due deliberation we have decided on rules that will be a benefit to the men and also to the company. It is the policy of our organization if we find men that will not look out for the interest of the company the same as if it were their own organization not to stand for them."

The Burlington at the various conferences was represented by Mr. Willard, Mr. Holdridge, Mr. Gruber, Mr. Clark, Mr. Torrey, Mr. Smith, Mr. Judson, Mr. Byron, Mr. Ross and Mr. Nutt. The protective body represented the 1,700 firemen who are employed on 9,000 miles of railroad and whose compensation monthly runs from $80 to $140 each.

Two years ago the company withdrew its objection to organized labor on its system, and this is the first time in seventeen years in which the officials of the road met with the representatives of union labor to have a conference.

This state of affairs, the men unreservedly proclaimed, has been accomplished through the zeal, energy and skillful diplomacy of the Grand Master, John J. Hannahan.

While the Board was in session Mr. Hannahan was almost constantly in Chicago, and the knowledge of affairs which he obtained through his long experience with railroads was every moment at the command of his friends and colleagues.

When the schedule was signed and the business disposed of which had brought the protective body and the railroad officials together a feeling of good fellowship

GROUP OF DELEGATES AND VISITORS TAKEN OUTSIDE LEXINGTON HOTEL, IN CONNECTION WITH MEETING OF JOINT PROTECTIVE BOARD OF THE C., B. & Q. R. R., RECENTLY HELD IN CHICAGO, ILL.

was evident on every hand. There were no sores to be healed, there was no grievance to be wiped out.

The Board adopted this resolution:

Resolved, That it is the wish of this Board to take this means of showing our appreciation and thankfulness for the invaluable services rendered us by our worthy Grand Master, John J. Hannahan, during this meeting, and to acknowledge in a small way the great help he has been to us in obtaining the best pay schedule west of Chicago, as we realize how hopeless would have been our task without his aid and council.

Therefore, it is our wish to thank him from the bottom of our hearts and to pledge him our loyal support in all his undertakings, and that his future life may be long and prosperous and all his ambitions realized, is the wish of every member of the Joint Protective Board of the Burlington System.

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Death of Brother Dupell.

It is with deep regret that the announcement of the death of Bro. Frank E. Dupell will be received, especially by the many members of the organization who have had the pleasure of knowing him personally. Bro. Dupell was a veteran in the service of the Brotherhood, being at the time he passed away and for seventeen years prior thereto chief clerk in the office of the Grand Secretary and Treasurer.

On the morning of July 21, 1905, while at breakfast with his family, he was stricken with apoplexy, and died in about two hours afterwards. Bro. Dupell was born in Clarksburgh, Pa., on April 14, 1851. When yet a child his father removed the family from Clarksburgh to Philadelphia, Pa. At the age of fourteen Bro. Dupell entered the service of the Pennsylvania Railroad Company in the storekeepers' department. Some two or three years later he became a locomotive fireman in the employ of the same company, and joined the Locomotive Firemen's Union, of which organization he was a member until its consolidation with our Brotherhood in 1877. In 1873 Bro. Dupell was married to Miss Henrietta Kohlbach. He was a prominent member of Lodge 75 for a number of years, and its financier up to the time of accepting his position in the Grand Lodge offices in 1888, at which time he was holding the position of yard engineer in the West Philadelphia yards of the Pennsylvania Company.

After removing his family to Terre Haute, where the Grand Lodge offices were located at the time he entered the service of the Brotherhood, he transferred his membership to Lodge 16, and, entering into its work with his usual zeal, was elected Master in 1889. His term of service in the Grand Lodge office commenced on November 1, 1888, and continued to the date of his death. He is survived by his wife and four children—Mrs. E. C. Dunlap, Terre Haute, Ind.; Fred D. Dupell, electrician for the Colean Manufacturing Company; Misses Lillian D. and Margaret Dupell, at present residing in the city of Peoria.

Bro. Dupell's kind, courteous and gentlemanly disposition made for him friends of all with whom he became acquainted. All brothers of the organization who have served on committees or boards of any kind necessitating their presence at the Grand Lodge offices remember their associations with Bro. Dupell as one of the most pleasing features of such visits. He was at all times ready to cheerfully coöperate with them in the performance of their duties and seemed to take a special pleasure in rendering any assistance that it was in his power to extend.

Bro. Dupell was always an active and enthusiastic Brotherhood man, having been delegate to several of the Grand Lodge Conventions. At the First Biennial Convention he was chairman of the salary committee.

The Magazine extends to his sorrowing family its sincere condolence in their bereavement.

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An Heroic Act.

Bro. P. J. Lavery, Secretary of Lodge 277, writes the Magazine office that Bro. George Poell, a member of that lodge, while saving the life of the two-year-old child of Station Agent Ussary, of the St. Joseph and Grand Island Railroad, lost his left leg five inches below the knee. As the train on which Bro. Poell was firing neared the place he and Engineer Bishop saw the little boy playing on the tracks. The train was then rounding a curve, but it was too late to stop it. While the engineer applied the brakes Bro. Poell ran out over the pilot and shoved the child from the tracks. In doing so he lost his balance and in some way his foot became fastened to the engine and he was dragged across a forty foot bridge and his ankle torn from its socket. He was placed on a special train and, after receiving temporary treatment from the company surgeon, was taken to St. Joseph, where his leg was amputated. The child has fully recovered, having been but slightly bruised. Bro. Poell is twenty-three years of age, having been a fireman since the year 1901, and has belonged to our Order since 1902. He is getting along nicely at this writing. His friends hope to interest the trustees of the Carnegie hero fund and secure some recognition for his brave act. Bro. Poell was married about a year ago.

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Back Numbers of the Magazine.

Back numbers of the Magazine can be secured from the parties whose names and addresses are given below:

Wm. Weiler, box 25, Port Morris, N. J., has the following copies: 1883, October; 1884, complete except June and April: has August, September and November numbers in duplicate; 1885, complete, and from May to December inclusive; 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903 and 1904, complete.

J. C. Cornelius, 5110 Chaplin street, Pittsburg, Pa.: 1903, February to December, and 1904 complete.

W. G. Lindee, 2619 Reese street, Omaha, Neb.: 1899, August, September, October, November and December; 1900, 1901, 1902, 1903 and 1904 complete, and January to July, 1905.

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Sparks.

The Buffalo Convention, realizing the great advantage to be derived from an increased circulation, provided for the appointment of Magazine Agents, as per Section 47a of the Constitution, which says, in part:

"It shall be the duty of the Master of each subordinate lodge to appoint a member of that lodge to act in the capacity of Magazine Agent therefor, and when more than one system of railway is represented in the membership of a lodge, additional Magazine Agents may be appointed for each system. It shall be the duty of the Magazine Agent to solicit subscriptions, receiving his commission therefor."

But few Magazine Agents have been appointed so far, and it is hoped that the Masters of subordinate lodges will recognize the advisability of having an Agent in each lodge and will appoint one at the earliest possible date. Your hearty coöperation is urged and will certainly be appreciated. We are always ready to send information and samples to the newly-appointed Agents.

Read the story of "Lanky" Jones as told in the advertisement of the Cleveland & Whitehill Company on page 017 of this issue. "Lanky" Jones is an eccentric character, but points many good morals in the purchase of his overalls.

Bro. L. M. Duggins, Secretary of Lodge 376, writes the Magazine office that his lodge is in good condition, having several applicants for initiation soon. The boys are doing all the work they can stand and enjoying the best of health.

Are you going to buy a range or heating stove this winter? If so you will find it to your advantage to read the advertisement of the Canton Stove Company, which appears for the first time in this issue of the Magazine. If you will write them for their prices and free catalogue No. 26 you will find that you can save about 40 per cent. on the cost of a new stove, and they pay all the freight to your railway station.

Bro. G. T. Woodson, a member of Lodge 675, writes the Magazine office that his lodge is progressing nicely and that they are taking in new members at every meeting. He states that they are glad to welcome visiting brothers always.

Bro. A. E. Morden, who lost his life in a wreck on the Santa Fe Railroad a few months past, was an active member and an earnest worker in Lodge 173. Bro. Thomas Morden, his brother, wishes to thank the members of Lodges 173 and 84, also the Ladies societies, for their kindness and sympathy shown to his relatives during their sad bereavement.

R. L. McDonald & Co. are showing a new advertisement of their excellent "Red Seal" overalls in this issue. This company has been a constant advertiser in our Magazine for a number of years. They have developed thereby a wide market among our readers for the sale of their overalls, and one which is fully sustained by the merits of their goods.

GRAND JOINT UNION MEETING by railroad organizations to be held in Toledo, Ohio, on the 24th inst. See particulars elsewhere in this issue.

An official circular issued by W. L. Park, general superintendent, and approved by A. L. Mohler, general manager, of the Union Pacific Railroad Company, under date of July 1, 1905, says:

"Mr. Webb C. Ball is appointed general time inspector, with headquarters at Omaha, Neb., vice Mr. J. W. Forsinger, effective July 15, 1905."

This adds another great railroad system to the already long list of those under the general time inspectorship of Mr. Ball, of Cleveland, O.

More new advertisers are taking space in this issue of the Magazine than at any time before. Business men are beginning to realize the necessity of advertising among railroad families, and if you will give more of your attention to the reading of the advertisements and patronize our advertisers whenever possible in making your purchases, you may be sure that these advertisers will stay with our Magazine.

Bro. Marrs, Secretary of Lodge 386, writes the Magazine office that his lodge is growing slowly, but surely, receiving good material in their lodge, and hope to continue to do so.

If you are experiencing any trouble at all in the delivery of your Magazine, don't fail to write a letter or send a postal card to the Editor at once, when the trouble will be remedied.

All notifications for change of address should reach the Magazine office on or before the eighteenth of the month, as the mailing list is closed on the twentieth and all the wrappers for the following month are addressed. Many have been in the habit of sending in requests for change of address after these dates, and it is impossible to attend to the matter so as to insure their receiving the following month's issue at their new address.

It is a well known fact that a large proportion of the heat and heating qualities from coal and other fuels escape from stoves and furnaces into the chimney, thus causing a continual loss. A device to prevent this waste is manufactured by the Fuel Protector Company, of Jackson, Mich., and a quarter-page advertisement of same appears elsewhere in this issue of the Magazine. It takes the place of of the first length of smoke pipe leading away from the fire, and has three chambers, the ends of which are moveable, so that the chambers can be adjusted at will to either a direct draft or so that the circulation is through the protector. Its action is to prevent the heat and gases from escaping through the chimney, resulting in the consumption of less coal, wood or coke. By preventing the heat from escaping and holding the gases so that they can be burned, a much hotter fire is produced. The device has been used with very good results by the Michigan Central Railway Company. A number of railroad men who have used the fuel protector claim the saving to be up to 30 per cent. of heat and coal. It will pay you to correspond with them and secure full information.

None who can attend should miss the Toledo (O.) JOINT UNION MEETING, to be held on the 24th inst. Apply through proper officers for transportation as soon as possible. Full particulars given elsewhere in this issue.

When writing the Editor and requesting change of address be sure to include the number of your lodge, your former address, and the office you hold, if any, in your lodge or on your Local or Joint protective Board.

Sample copies of the Magazine will be freely furnished to all who are interested in distributing them with a view to increasing our circulation. Write today.

It is necessary in order that your change of address take effect with the following month's issue that such request reach this office on or before the eighteenth of the month.

If you want to buy a pretty locket, you will find just what you want advertised on page 020 of this issue of the Magazine. It is a little beauty, and is just as good as it looks.

Please read Section 47a of the Constitution, which says:

"It shall be the duty of every member to notify the Magazine Agent of his lodge or the Editor and Manager direct of any change in his address or failure to receive his copies of the Magazine, and if such notice is not received by the Editor and Manager within thirty days, duplicate copies of missing numbers can not be supplied."

The Magazine office is still receiving letters, the writers stating that they have not received their Magazine for some months, and requesting back numbers. It is almost always discovered, when investigating such complaints, that the trouble is due to the fact that they have changed their address without notifying the Editor. Just a line or two on a postal card, sent at the proper time, is all that is necessary. Notify the Editor promptly when changing your address. Then there will be no danger of your not receiving all copies of your Magazine without interruption.

The Morrison & McIntosh Company are taking double-page space for the presentation of a strong and handsome advertisement of their splendid "Reindeere" firemen's gloves—see pages 08 and 09. They offer you a chance to get a pair of the gloves free. Better follow it up if you want to get a pair of good gloves.

A member of Lodge 382 writes that Bro. Earl A. Brandon, a member of that lodge until his death a short time ago, was an active and enthusiastic member of the Brotherhood and had just been appointed Chaplain of his lodge. He was born at Ft. Worth, Tex., June 5, 1881. He began railroading September 3, 1902. Bro. Brandon was killed in a railroad accident near Bowie, Tex., July 19th last.

A brother writes that a nicer set of boys never wore the Brotherhood pin than the members of Lodge 295, at Raton, N. M., and that Bro. Wm. McGrath, as Chairman, preserves a feeling of harmony and good will between the company and its employes.

Bro. H. E. Werkheiser, Secretary of Lodge 680, writes the Magazine that although their lodge is at present the youngest in the State of Pennsylvania, having been organized on May 28th of this year, with twenty-two charter members, they now have twenty-five enrolled on their books, with prospects very bright for the future, and that the brothers will hear from them again.

Business on the road is rushing, and you may be one of the boys to be called in for examination this fall. Are you prepared for it? N. W. Henley & Co. are using full-page space this month in which they advertise five excellent railway technical books that no man engaged in locomotive engine service can afford to do without. Read this advertisement and send the Henley Company your order.

REMEMBER, OUR "EXTRAORDINARY PREMIUM OFFER" is still running. Would like to see you take advantage of it.

Every railroad man needs a knife. Why not secure one possessing pliers, wire cutters, leather punch, lace hook, hoof hook, etc., by sending in two yearly subscriptions to the Magazine?

All Brotherhood men should wear a B. of L. F. emblem ring, and there is no reason why they can not, when by sending in two yearly subscriptions to the Magazine office a ring with most any fraternal emblem desired will be sent them.

The Dukesmith School of Air Brakes is a new advertiser in this issue of the Magazine. They offer to teach our readers everything that it is necessary to know about the air brake, at a price that is so low as to be within reach of any railroad man. See what they say.

Bro. D. L. Marrs, Secretary of Lodge 386, and Bro. Clyde C. Collinson have embarked in the real estate business in San Diego, Cal. They represent the San Diego Rental and Investment Company. Bro. Marrs writes the Magazine office that any of the brothers who wish to buy a home near the Pacific Ocean, where the flowers bloom all the year round, and where the winters and summers are all the same, and the billows at night time lull one to sleep, should write before the choicest homes are passed into other hands, and while they are not too high priced.

Mr. C. [redacted]'s Air Brake Catechism is again advertised in this issue of the Magazine. The book does not cost much, but it will do you a world of good.

THE DEVINE WONDER KNIFE, one of our premiums, is just the thing for a railroad man. Test it and see.

ALL who are interested in securing one or both of our premiums will please write to the Editor and Manager, John F. McNamee, Traction Terminal Building, Indianapolis, Ind., for terms and sample copies.

The Eisendrath Glove Co. have taken the back inside cover page for the advertisement of their celebrated gloves, for the coming year. The design they are running this month shows an effectual demonstration of the great strength and lasting qualities of these gloves. Read their offer of a free pair.

Why not try for one of our premiums? It's easy. The Magazine secures subscriptions on its merits.

Many of our members are enjoying the possession of one of the beautiful emblem rings we are offering as a premium. You would enjoy wearing one also. Try it and see.

Your help is solicited in an effort to swell our subscription list to the 100,000 mark. Coöperation will do it.

If you wish to work on commission in soliciting subscriptions for the Magazine write to John F. McNamee, Editor and Manager, Traction Terminal Building, Indianapolis, Ind., for particulars. Your help is needed.

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Forum

A New Home for Our Aged and Disabled Railroad Men of America.

To the Members of the Four Great Railroad Brotherhoods:

No doubt, many of you have heard of the Home for Aged and Disabled Railroad Men of America, and read of the many requests for donations to support the same that came from the management of the Home, and many of you have followed the reports in your official publications of donations received, and no doubt have been surprised at the smallness of the responses to these requests, also the indifference shown to articles published from time to time by some interested brother whose heart is in the cause and the suggestion he makes to elevate a just and noble work. The Home has been in existence about fifteen years. It was started by a local philanthropist who came in contact with some of our unfortunate and disabled brothers who, through accident and disease, were thrown upon the charity of the community at large, and the poor-

Left to right—L. H. Griffith, 207, B. R. T., loss of right hand and fingers on left; H. J. Ryan, 33, B. L. E., loss of both hands; J. J. Bellaire, 26, B. L. F., loss of both hands; T. W. Powell, 59, O. R. C., loss of right hand and partial paralysis same side

FOUR UNFORTUNATE BROTHERS, HOME FOR AGED AND DISABLED RAILROAD MEN, HIGHLAND PARK, ILL.

house staring them in the face. (It is a shame that we, with such staunch organizations, should permit one of our own who, in his vigor, had his shoulder to the wheel pushing our organizations to success, to suffer.) This man seeing their many needs and his love for the railroad man with whom he met in his daily travels, brought them to his own home. This was the origin of a grand and noble work, which should interest every member of our four great Brotherhoods today and for all time to come, and will in the near future with the concerted action of all Brotherhood men of America be crowned with success, and stand out as a monument of our integrity, benevolence and good will to all brothers.

It has been hard work to get the brothers of our organization to adopt this infant of the said philanthropist, who began this grand work, and assume the responsibility of it and make it a Home, not a charitable institution, where one can go if necessity compels without having the brand of charity or the word "charity" staring him in the face. We can maintain a Home as well as any other organization, and support it with a very small per capita. Let the members of the four Brotherhoods think this over and get together and give their hearty support to a plan for a building fund for a new Home. All for one home, one home for all. As we live and labor together and are working toward the same goal, let us live for and learn to love each other, and strive to bring out the better nature of our brothers and promise to look after and care for our disabled and aged ones that their few remaining years on earth will be happy ones; but remember that we can not maintain a Home without the co-operation of every member by extending moral and financial aid.

M. E. MURRAY.

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A Few Words from the Cotton Farm.

Well, boys, after a hard day's work, toiling with the fleecy plant, I thought I would drop a few lines. After two years' experience as a fireman, I surely know what your grief is these hot days. Farming is pretty rough, but our work is about over until September when cotton picking sets in, so you see this is about the liveliest part of the year for us. I have been at home for about six months and am twenty miles from the railroad.

July 4th was the first time I had seen an engine since Christmas. You have no idea how I felt when she came dashing up. After a few winks at the fire boy I felt all O. K. again.

I get the B. of L. F. Magazine every month and pass away the weary nights reading it. I am too far from any lodge to attend meetings, but am always to the spot with my dues, for I know when I have met a B. of L. F. man I have met a friend.

I see some of the boys are speaking of wetting coal. With my short experience I think it is much better to wet the coal.

The following is a brief description of what we had to contend with on the road that I was employed on away down here in the State of Mississippi. The division is two hundred and thirty-five miles long, very hilly—they give you all you can drag on level track and when you get to a hill go up if you can—can't go double if you can't go thrible, then, perhaps, you can roll ten miles. Promotion is very good, but the rest of it. Let me see—we had the ten-wheel type engines and they weren't kept up at all. When starting out if we had a shovel, O. K., if not, we might steal one—get our oil the best way we could, and hurry up, maybe we could get there the next day before dinner—that was never less than twenty-four hours. We cleaned our engines inside and out, and had about three negroes to one white fireman. Our engineers were the biggest hearted fellows the country affords. We have all negro brakemen to keep the coal well ahead, that's one satisfaction.

Well, I haven't told you anything about the cotton farm yet. We have our "ups and downs" on the farm as well as everywhere else. Though 'tis real encouraging in good weather to go out and look at your crop with its green leaves and beautiful blossoms of red and white with their heads bowed toward the golden sun, but it may go to raining for a couple of weeks and all the while "General Green" (the grass) is getting a better hold. Cotton may go up to ten or twelve per pound, which is very encouraging. Then, perhaps, when we get "ready to sell" it falls to five and six, then we are "in the hole." We are like all other laboring men, trying to get organized, having organized what is known as the Southern Cotton Growers' Association. Our aim is a reduction in acreage and to hold our produce to increase its value.

After all, I enjoy country life very much. We are the most independent poor people in the world. Can "lay off" any time we like and nobody to "raise a kick." In winter we can eat our own ice and in summer we eat our own fruit and watermelons, etc. We country boys own our own horses, and our good neighbors have a few pretty girls. So, brothers, we can go to see them. It's always my luck to go to see one twice and then she marries the other fellow the next week. In the summer we always have protracted meetings at the different churches through the country, then you may believe we have a time. The girls always see that the boys are well fed—then we fan and smile until it is time for the boys to go home and milk the cows. MEMBER, LODGE 460.

RECEPTION ROOM, FURNISHED BY WEBB C. BALL, CLEVELAND, OHIO, HOME FOR AGED AND DISABLED RAILROAD MEN, HIGHLAND PARK, ILL.

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Accident Insurance for Firemen by the Firemen.

In answer to Bro. A. G. Higgins' suggestions in the July issue, will say that it may be all right in a great many cases, but from my point of view I think it could be changed some. His plan is for those carrying $500 policies that they be allowed $5 per week accident benefits (I suppose that includes sickness), at 50 cents per month dues, payable quarterly; for those carrying $1,000 policies, $10 weekly, at $1 per month; for those carrying $1,500 policies, $15 per week, at $1.50 per month; and for those carrying $2,000 and $3,000 policies at same rate, which means $6, $12, $18, etc., in addition to our regular dues. While it would be good, cheap insurance, I do not think it would be advisable. To carry a $1,500 policy and the accident insurance attached would make dues run rather high, and there are no doubt a goodly number of our brothers who are not on the road and have all they can do to meet the quarterly dues. He also states that any one making such claims should have same signed by the attending physician and Master of the lodge, which I will say is an utter impossibility.

I have been a member of the Brotherhood of Locomotive Firemen for only about three years, and I have been to lodge but a few times since I became a member. I am located quite a distance from the nearest lodge room, which I think, under existing circumstances, is a good excuse. I would be a regular attendant had I the opportunity that many have and do not attend.

I would like to see Bro. Higgins' plan carried out in this way: When a brother takes a position on the road, let the Secretary or Treasurer, or, if necessary, an agent appointed for each lodge, call on him and find his standing in the Order, and if in good standing insist that he take a policy as the brother has suggested. I think ten days under a doctor's care would be a long while before the policy would be effective. I think the afflicted brother could procure a certificate from the attending physician, stating his condition, and that he should be allowed benefits for the number of days he lost; said policy to expire for non-payment of dues twelve months from date of issue, unless renewed. I would like to hear a voice from each and every brother of the Order.

Harley Arnold.

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The Value of Our Card.

A fireman's card is considered one of the best credentials a traveling brother can have. From my experience it is recognized where others are not, and we all, each and every one of us, should use our utmost efforts to sustain and support its reputation. It makes one feel good when in a strange town to know that he can obtain credit and recognition by exhibiting his card at a hotel or store, and his heart will swell with pride, and it will make him a better Order man. Therefore, our cards should only be issued under the most urgent necessities, and with such confidence by the issuing lodge that the lodge itself would vouch for the proper use of same to a reasonable extent, and most lodges do. Member.

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The Magazine.

In reading my Magazine this morning (July 5th) and noticing premium offer, I took my Magazine and walked down town, and inside of one hour had four paid subscriptions. Now if every member would do half as well, see where it would place our Magazine. I had no idea it was so easy. All that is necessary is to take the Magazine along and show it and it will sell on its merits, and I see no reason why we should not double our circulation by the end of this quarter. These subscribers are all business men of this town, and were only too glad to get the chance to subscribe for our book. We have a book second to none, but it might be made better, and I think the way to do this is to increase our circulation. So let every B. of L. F. man take this matter up, and when he has a lay-over day take his Magazine and spend just one hour trying to get new subscribers, and at the end of this quarter note the results.

F. O. Miller,
Member Lodge 644.

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Accident Insurance.

I notice in the July number of our Magazine a communication from a brother concerning "Accident Insurance for Firemen by the Firemen." I want to say that I most heartily voice his sentiments and think the plan which he suggests would be a good one. All firemen carry some kind of an accident insurance, and I do not see why our home lodges could not perfect an arrangement to give us this protection for sickness and accident, but I would deviate somewhat from the plan that our brother suggests, in that I should like to see the brothers paid for *all* the time they lose, either by sickness or accident. If he be totally disabled from performing any of the duties of his occupation for one week, why let him be paid for that one week.

I do not see why the B. of L. F. should not share the benefits with other insurance companies. We all love our "Brotherhood" and we would have perfect confidence in insurance in it, with no feeling of uncertainty about getting the claim, as we have seen so many of our brothers who carried insurance in some other companies put off with just part of their claim through the picking of some flaw in the claim. I have had such experience with certain companies, as well as a number of our brothers. Let us hear from some one else on the subject.

G. T. Woodson.

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In the Field

First Vice Grand Master.

Again it becomes my pleasant duty to give the readers of our valuable Magazine a brief summary of my observations for the past few months.

While at Peoria, Ill., in company with Grand Secretary-Treasurer Bro. W. S. Carter, I visited Lodge 48, and am pleased to state that I found the lodge in first-class condition. Bros. E. B. Williams, T. J. Tanman, John Dolan, D. N. Watt and James Knox are ideal officers and are always on the watch to grasp opportunities that will be to the advancement of the Order's interests.

While working at the Grand Lodge office, I was extended the comforts of the homes of Bro. W. S. Carter, Dr. W. B. Watts, and Chief Clerk, Bro. C. E. Studer, and take this opportunity to express my gratitude and appreciation of their courtesies, all of which will be reciprocated should these brothers ever come east.

While working with the Grand Central Station and Harlem Line Joint Board I called on the members of Lodge 291. It gives me pleasure to state that the following brothers are working faithfully to improve their lodge and make it one of the banner lodges in the State of New York: E. W. Grant, W. C. Latimer, Frank Mack, Robert Burns, H. Jacobs, E. Brown, H. Wagner, William Harnett.

While in New York I availed myself of the opportunity to call upon the members of Lodge 309, and found prevailing conditions very satisfactory. The following brothers are largely instrumental in keeping up the good standing of this lodge: E. M. Jewelle, C. J. Hopkins, Howard Forbell, Harry Greenlaw, Edward New and James A. Mott. Bro. Hopkins is one of the noted "bike" riders of Long Island, at least so says Bros. Davis and Zimmerman.

While at Peru, Ind., I had the pleasure of meeting with Lodge 405. The attendance was large. Bro. J. R. Morrissey, the popular Master, who has the distinction of being superintendent of the Peru Water Works, handles the gavel in good shape, and Bro. George W. Wagner, the Secretary, wields the goose quill to perfection. Bro. C. E. Dice looks after the grievances of the Wabash brothers.

I also met with Lodge 157, and there found the lodge's interests well looked after by the following brothers: R. L. Sweeney, W. E. Trippeer, W. H. Dariot, H. M. Loughran and E. E. Overmeyer.

The members of Lodge 405 employed on the C., C. & L. R. R. deserve to be complimented on the selection of their Joint Board, with such members as Bros. C. A. Gibson, B. A. Capner and Phil Barnett, better known as "yes or no." These men transact their business in a thoroughly business-like manner and are a credit to the men they represent and the company that employs them. We take this opportunity to thank Bro. T. Doud, of Lodge 405, who is chief of the Peru fire department, for courtesies extended while in Peru. We also wish to thank Bro. George W. Cogley, of Lodge 52, for his many acts of kindness while in Logansport, Ind.

While working with the Chicago, Cincinnati and Louisville Railroad Joint Board, in company with Bros. C. A. Gibson, B. A. Capner and Phil Barnett, of Lodge 405, we called on the Fleetwood brothers at Covington, Ky., and finding no meeting we called at the C. O. roundhouse and met the following brothers: F. Meyers M. S. Weise, M. Wilson, George Crouse, William Sutton, T. Dwyer, J. P, Burns, better known as J. P. Morgan. Bro. E. A. Lyam, now of B. L. E. Div. 271, was the first Master of Lodge 424. I am indebted to Bro. John H. Mann, of Lodge 424, for his kindness while in Covington. It is reported that Bro. W. H. Onions is about to become a benedict. We wish Bro. Onions a long and happy life. Of course the boys will all enjoy a good smoke.

Among those who are taking an active part in the affairs of Lodge 424 may be mentioned the following: Bros. J. C. Perry, C. W. Pickett, M. Mackie, J. E. Perry, J. T. McDaniel, W. A. Barnett, N. Wilson, C. D. Willett.

While at Dayton, O., working in the interest of Lodge 375, I had the pleasure of making the acquaintance of Bros. G. H. Smith, E. C. Wilcox and L. T. Sifford. It affords me pleasure to say that these brothers are working with that degree of zeal and earnestness so characteristic of Brotherhood men.

Bros. C. B. Whitman, H. E. Werkheiser, W. P. Talmadge and George C. Dowling, of Lodge 680, say that a year hence they expect to have the banner lodge of the State of Pennsylvania.

I feel indebted to Bros. W. E. Lumley, M. F. Davern, Amos Wilson, E. Brawn, E. H. Emery, W. D. Marvin and R. F. Croop, of Lodge 228, for their valued assistance in organizing Lodge 680. Come again, brothers.

I take this opportunity to express my thanks to Bros. I. R. Smith, of Lodge 1, and A. R. Howard, of Lodge 169, for their kindness to me while in their respective cities.

While working with the Buffalo-Susquehanna Joint Board I visited the lodges in and around Buffalo, and found them all in good condition. During the past few months I have had the pleasure of meeting with several of the Joint Boards, among them the Buffalo and Susquehanna Railroad and the Pittsburg and Lake Erie. These boards conduct their business affairs in a satisfactory manner and are a credit to the men they represent. Much credit is due Bros. N. E. Watson, Clyde Hall and S. R. Carr, of the Buffalo-Susquehanna, and the same may be said of Bros. J. G. McDermott, Charles B. Buck and P. J. Scheier, who represented the P. & L. E. Joint Board.

While at Pittsburg, Pa., working and meeting with Lodge 392, we had a call from Bro. Thomas and Sister Yost, of Harrisburg, Pa. Tom says Pittsburg is a great city, but Harrisburg is good enough for him.

My next visit was Lodge 235, and it is pleasing to report this lodge in good condition, attributable to the work performed and interest shown by the following members: Bros. M. H. Potter, W. Steele, H. Robb, Jos. Michaels, James Burns, S. A. M. Saxman, W. Hetrick, H. F. Mench, Edward Long, E. L. Rice, B. L. Bolden, D. Sumerson and William Lohr, all of whom were present at the meeting. The following visitors from Lodge 392 were present also: Bros. Baker, Yawber, Doran.

My next stop was at Foxburg, Pa., the home of Lodge 406. Here I met the following members: Bros. C. A. Gates, Borne, R. L. Harmon, W. M. Schultz, P. J. Deffenderfer, T. J. Coakley, W. E. Platt, W. T. Irwin, Otto Brightshue and J. S. McCoy. While here I enjoyed a boat ride in Mr. Harding's handsome steam launch, accompanied by Bros. C. A. Gates and Otto Brightshue.

While at Allegheny, Pa., I met our old friend and brother, M. S. Anderson, who still has a warm spot in his heart for the fire boys.

At Pittsburg I enjoyed a call from Bros. Thomas Quirk, L. B. McGinnis, Stewart and Kelly, of Lodge 378. Come again, brothers.

I wish to thank Bros. E. H. Lawer, A. L. Baker and P. S. McCreery, of Lodge 392, for kindness shown while in Pittsburg.

I next stopped at Sayre, Pa., where is located Lodge 379. Here I met the following members, all of whom take active part in the business of their lodge: Bros. Elisha Forbes, Walter C. Snyder, Jesse Madigan, Michael Kelly, Michael Falsey, A. E. Ridgeway, Thomas Hogan, John Bull, Samuel Line, James Downs, James Damon, Harry Santee, Mahlon Cole, John Guss, W. Mason, Clayton Stevenson, Thomas Fitzgerald.

My next stop was at Ashley, Pa., the home of Lodge 454. Here I found the following members showing a creditable degree of interest in their lodge: Bros. George Flower, C. O. Gower, Alfred Eddy, H. H. Ruhf, E. J. Kreidler, William Dennis, Rudolph Small, Jay Remley, W. D. Johnson, Samuel Kindred, John Flannery, Patrick McManamin, Charles S. Evans. I wish to thank Bro. E. L. and Sister Reiley for courtesies extended and assure them of my willingness to reciprocate, should they ever come east.

Leaving Sayre I was given a mile-a-minute ride by Bros. J. W. Martin and O. D. Hudson with their handsome L. V. R. R. engine 2238.

Next stop was at Lehighton, Pa. Here a special meeting of Lodge 384 was held, the following brothers being present: L. O. J. Strauss, W. E. Krock, W. Smith, Thomas Rohrbach, Master, H. Xander, John Beck, Charles Siegfried, A. Dreisbach, John Shaffer. Bro. E. E. Reed, Collector of Lodge 384, says the members of his lodge are the best payers in the organization. We are sorry not to have had the pleasure of meeting School Commissioner Bro. W. D. Hontz, while visiting his lodge. The members of Lodge 384 are asking the question "What is the attraction at Blackwood, that Bro. E. Hufford goes there so often?"

While at Lehighton I met an old friend, George Sthrom, of B. R. T. Lodge 292. Also met Bro. E. L. Kunkle, who is still standing firm.

It is reported that Bro. M. H. Potter, the popular master of Lodge 235, is contemplating giving up railroading and go-

C. A. Gibson, 405,
Chairman

C. A. Wilson,
First V. G. M.

B. A. Copner, 405

P. A. Barnett, 405,
Secretary

JOINT PROTECTIVE BOARD, C., C. & L. R. R.

ing into the Red Raven Splits business. Success to you, brother. I was sorry to learn of the illness of Bro. A. Seigfried, and we trust that he will soon be restored to his usual good health.

While visiting Lodge 362, I found the interests of the lodge carefully guarded by the following brothers: C. Baker, William Darey, F. B. White, W. J. Schimley, Albert Smith, Peter Prendergast, Samuel M. Hamilton, Herbert Hall, J. J. Keelty. Bro. P. J. McNamara, of Buffalo, was present and gave the brothers some sound advice. Come again, P. J.

While at Buffalo, N. Y., I met Bro. Frank Davidson, of Lodge 472, Bro. George Blackburn, of Lodge 614, Bro. Fred. Russett, of Lodge 241, and Bro. James Kane, of Lodge 12. These brothers are ever ready and willing to do what they can to advance the interests of the Brotherhood. Bros. P. S. Kane, of Lodge '99, C. S. Wilson, of Lodge 553, and T. L. Summers, of Lodge 246, ably represented their respective lodges at the meeting of Lodge 472.

Bros. George Plumstead, of Lodge 316, F. J. O'Brien, of Lodge 230, and J. E. Cunliff, of Lodge 12, are always welcome visitors at the meetings of Lodge 101.

I am sorry to hear of the misfortune of Bro. John Nead, of Lodge 276, who lost a foot by falling from his engine.

While visiting Lodge 101 I found the following brothers taking active part in the affairs of the lodge: Bros. George Bagley, James McAuliffe, and W. Carter and a number of others whose names a can not recall. While in Harrisburg I was extended the comforts of the home of Bro. Chas. and Sister McElder, and take this opportunity to thank them for their generous hospitality.

At Buffalo, N. Y., I had the pleasure of renewing acquaintance with Bro. C. Wheatley, of Lodge 276; Henry Schulte, J. R. Carran, Walter Freemyer, of Lodge 472; Don Stanton, George Kugler, J. E. Woodward, James A. Healey, Bro. and Sister Schepper, Bro. and Sister Everhart, of Lodge 166. Enjoyed a dip in the ocean while at Coney Island. Bro. Schepper says every day at Coney Island is like the Fourth of July at Huntingdon.

I was very much grieved to learn of the death of Bro. Frank E. Dupell. In his death the Brotherhood has lost one of its most faithful members. From the beginning of his membership until his death the Brotherhood to him was everything, next or secondary only to his love for his family. Frank Dupell was a man of considerable intelligence, of pleasing personality, congenial and whole-souled, devoted to his family and friends, and one who had no enemies. His is a memory of Brotherhood service, of good deeds to his fellow man, of faithful friendships and family devotion.

I was informed while at Ashley, Pa., that the Ashley Fishing Club, composed largely of the members of Lodge 454, took their annual outing at White Oak Lake, and that Bro. Elmer Butz had a narrow escape from drowning. It is reported that when Bro. Farmen Smith had succeeded in towing Bro. Butz to shore, the natives thought he had caught a whale, and fled in terror to the surrounding hills. Bro. Reiley suggests that Bro. Butz supply himself with a good sized life preserver next time, or a pair of swimming wings.

In concluding this letter let me say that wherever I go, I hear nothing but praise for the Brotherhood and its valuable Magazine. The outlook for the organization was never brighter. I hope that every member will renew his interest and each one bring in a new member this year; and while looking for candidates let us not forget to secure at least one new subscriber for the Magazine, the Order's good right arm, and thus encourage our brother Editor.

C. A. Wilson.

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Second Vice Grand Master.

Continuing my trip through the South since my last letter in the Magazine regarding my work in the field, I believe that I am safe in saying that it was one of the most successful trips which I have had the pleasure of making in that section of the country. After completing my work at Nashville, Tenn., I started south and stopped off at Jackson, Tenn., where I attended a regular meeting with Lodge 201. It is unnecessary for me to say that I found the lodge in its usual good condition, the officers attending strictly to business and the members ready and willing to assist them in every way possible. I was pleased to meet again Bros. Geo. Vanderbrook, the popular Master, and who has held that position for several terms, and W. J. Hilman, who performs the duties of Secretary.

Arriving at Meridian, Miss., I held a joint meeting with Lodges 200 and 635. On account of business being exceedingly good at this point our meeting was not as largely attended as I would have liked. However, we held two very interesting meetings, and I trust that every one present will profit by what was said, and in the future more interest will be taken in lodge affairs, particularly in attending meetings and in the payment of dues, which is very essential for the perpetuity of their organization. If Bros. H. E. Eastburn, Master of Lodge 655, and J. E. Mitchell and T. Moore, of Lodge 200, had at all times the undivided support and co-operation of all the members, which they should have, and which they are entitled to, I firmly believe there would be no cause for complaint. I trust the members will take hold of this matter, and see if an improvement can not be made, as I expect to return there again just as soon as possible, and when I do I hope the reports will be more favorable, the membership will have increased, and

Phil J. Shrier **C. B. Buck**
J. G. McDermott **C. A. Wilson,**
First V. C. M.

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every member performing his portion of the responsibility. If this is done I can assure you that you will have no cause to regret, and those who have been working faithfully in the past to maintain their organization and to promote the interests of its members will say that their labors have not been in vain.

My next stop was Hattiesburg, Miss., where I met with Lodge 572. Some time ago I assisted in transferring this lodge from Gulf Port, on account of changing the terminal of the G. & S. I. R. R., and I am more than pleased with the progress made since that time, and with the present corps of officers for the present year, which are as follows: Bros. P. H. Scanlon, Master; J. G. Brown, Secretary and Treasurer; W. W. Leland, Collector, and W. L. Jennings, Chairman, I hope that there will be still greater improvements accomplished during the year, and that every worthy fireman under their jurisdiction will be enrolled to membership. This lodge has now an efficient corps of officers, and I hope every member will give them their undivided support.

Arriving at Selma, Ala., I held a meeting with Lodge 89, and while it is not my desire to find fault with officers and members, however, there are times when I believe some are deserving of being criticised, and by the knowledge which I received while at Selma, regarding the condition of affairs of this lodge, which were brought about entirely through the failure on the part of some of the members to pay their dues to the authorized officers at the proper time. It is very necessary that this should be done, and if not you must expect that sooner or later your lodge will be in bad standing, and the insurance policy of every member in jeopardy. This is something that you can not afford to do, and I trust that the present corps of officers will have the support of every member in order to bring about better results. I am sure that Bros. J. E. Hoge, Master, and N. L. Salmons, Secretary and Treasurer, are going to do their share of the work, and they should be encouraged by every member in their work.

Leaving Selma I went to Montgomery, Ala., where I held two good meetings with Lodge 258. This is not a very large lodge, on account of the employment of so many negroes at this point, and white firemen seem to be at a premium. Consequently, we can not expect to have a very large membership at this point while these conditions continue.

My next stop was Columbus, Ga., where I met with the members of Lodge 581. This is another place where the negro firemen predominate, consequently our membership here is quite small. However, those whom we have in our organization are worthy brothers, and I was pleased to meet Bros. W. P. Sweath, Master, and G. O. Collins, Collector. I hope that it will be my pleasure to return there again in the near future and remain longer with them.

Passing through Atlanta, Ga., I stopped off and met with Lodge 247, which is one of the best lodges in the South. I found as usual a large number present, including Bros. H. O. Teat, J. O. Covington, Secretary, and F. L. Francis, Treasurer.

Arriving at Chattanooga, Tenn., I found everything in readiness for a good meeting with Lodge 289. While in the city I had the pleasure of meeting Bro. W. R. Long, who is one of the leading business men of the city of Chattanooga, and with Bro. R. O. Kirchbaum, Master, he took us around the beautiful city in his automobile, including a trip over Mission Ridge and other historical places.

Bidding them good-bye I went to Knoxville, Tenn., where I held three good meetings with Lodge 444 and initiated several candidates. This lodge is improving every year and I was pleased to find it in good condition. There is, however, plenty of room for improvement, so far as increasing their membership is concerned, there being plenty of firemen at that point who do not belong to the organization, and who can easily be enrolled, providing every member will put forth an extra effort. I was pleased, indeed, to meet again Bros. Dodson and Moxey, who are always on hand and doing their part to build up their lodge.

My next stop was Pinner's Point, Va., where I held a meeting with Lodge 403. The members of this lodge represent the firemen employed upon the Southern Railroad. On account of the heavy business on the road, our meeting was not as largely attended as I would have liked. A great many of the members are lying over at Lawrenceville, Va., where they expect to transfer the lodge in the near future. I believe this will be a wise move, because it would be more convenient for the members to attend. I was pleased to renew the acquaintance of Bros. L. N. Stephenson, Master and Chairman, and J. C. Brittingham. I appreciate the interest these brothers are taking in the organization, and I trust they will have the co-operation of all the members.

Richmond, Va., was my next stop, where I held a joint meeting with Lodges 497 and 615. These lodges are in good condition, which I appreciate very much. I was pleased to meet Bros. I. C. Clarke, Master of Lodge 497; J. F. Denty, Master of Lodge 615; E. P. Miller, C. Anthony and T. G. Walker. I wish to take this opportunity to thank the brothers very kindly for the courtesies extended to me while in their city.

Going to Roanoke, Va., I held two good meetings with Lodge 182. One was an open meeting for the non-Brotherhood firemen, and I trust that some good will come from the meeting. There is plenty of room for missionary work at this place, as there are plenty of firemen who do not belong to the organization.

My next stop was Shenandoah, Va., where I held an unusually good meeting with Lodge 645. I attribute the good condition of this lodge to Bros. W. W. Frazier, Master; L. P. Carvell, Secretary; B. M. Elliott, Collector, and L. N. Schenk, Treasurer. This is not a very large terminal point, but every fireman who is eligible is a member of the organization.

From Shenandoah I went to Hagerstown, Md., and held a meeting with Lodge 512. We had a difficult task to secure a hall for the occasion, but we finally did and held a fairly good meeting, and I hope that those present will profit by what was said. I trust that in the future this lodge will not have any more trouble, and that every member will give his loyal support to Bros. C. E. Wooden and C. L. Thumma.

I next went to Alexandria, Va., and held a meeting with Lodge 625. Business at this place was exceedingly good and nearly all the boys were out on the road, or getting rest to begin another trip. However, we held a good meeting, considering everything, and I was pleased to meet the members, including Bro. W. I. Angel, who presides over the meetings. In my next I will have something to say about other lodges visited.

TIMOTHY SHEA.

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Third Vice Grand Master.

I arrived home after an absence of thirty-two days and enjoyed a quiet Fourth of July with my family. I will say quiet—yes, quiet compared with former years. Not that the people of my city were less patriotic this year than formerly, but they were more sane this year than formerly. In my opinion it takes more than a bunch of firecrackers and a handful of skyrockets to make a patriotic American citizen. Any way, I had a quet and glorious Fourth, and I enjoyed it. I don't get home often, but when I do manage to drop in for a day or two I feel rested up when ready for the "field" again.

On July 5th I visited Pittsburg, Kas., and was met at the train by Bros. Clapman, Fisher and Cary. Bro. Clapman is the newly-elected Master and Local Chairman. I feel that no mistake was made in placing him in charge of Lodge 489. Bro. Cary will keep the records of his lodge for another year, and will do the same good work in the future that he has in the past.

After finishing up my affairs at Pittsburg I went to Mena, Ark., where I was met by Bros. Lewis and Bordwell. I was unable to hold a meeting there, owing to the members being out on the road. However, I found things running along O. K. in this lodge. My mission to Lodges 489 and 529 was to look after some unfinished Joint Board work.

On July 7th, at 8.30, I arrived in Texarkana, Tex., and was met at the train by Bro. Lawrence Johnson and several members of Lodge 243, as well as Bros. Barnette and Ward, of Lodge 70, Longview, Tex. I held a good meeting with Lodge 243 and it lasted until late in the night. This was my first visit to this lodge in a long time, and I appreciated the splendid meeting that was held. Lodge 243 is moving along nicely, and all have reason to feel proud of how things are going in Texarkana. This was the first time that I had had the pleasure of meeting Bro. Ward since the last convention. Bro. Ward is a member of the State Legislature of the great State of Texas, and it can be truthfully said that the last session of the Legislature enacted some good laws for the laboring men of that State.

On Saturday, July 9th, it became necessary to have Bro. George Standley, of Lodge 551, examined for total and permanent disability, on account of consumption of the lungs. I had to go to Boonville, Ark., to have the brother examined. I found him in poor health, and I feel that if some of our members could only realize what a help the insurance is in cases like Bro. Standley's, there would be no trouble to collect quarterly dues.

On Sunday afternoon and night, July 9th, good joint meetings were held under the auspices of Lodges 304 and 551, Argenta, Ark. I found Lodge 551 greatly improved over a visit paid it a short time ago. when it became necessary to change some of the officers in the lodge. Lodge 304 is again on her feet, after having a siege of neglect on the part of her officers. Our members should not for one moment tolerate officers that fail or neglect to do their duty. If a member can not serve the lodge as he should, let him step aside and let some one else take up the work who will do it. There is no law in our Brotherhood that will force an office on any one, but when a member accepts office there is a law that will punish him if he doesn't attend to business. What we want in our Order is real, live, wide-awake hustlers, who will take an interest in lodge work and keep the lodge fires aglow all the time.

Monday night, July 10th, was a memorable one for Lodge 45 and L. S. 80, as a joint meeting and public installation of officers was held. Everything went off all right, without a hitch in the program. The following officers will preside over Lodge 45 for the ensuing year: Bros. H. C. Shepherd, Master; C. C. Hill, Vice Master; J. M. Brickhouse, Secretary; T. P. Howard, Treasurer; H. C. Shepherd, Collector; Local Protective Board, J. M. Brickhouse, Chairman; R. J. Cashien and W. A. Satter; Board of Trustees, M. S. Cox, O. B. Miller and W. T. Spain; Legislative Representative, J. M. Brickhouse.

The following officers will preside over the destinies of L. S. 80 the coming year: Sisters C. S. Boen, President; H. C. Shepherd, Vice-President; J. M. Brickhouse, Past President; John Ritter, Chaplain; Thos. Patten, Secretary; Lizzie Dyer, Treasurer; Lizzie Harrison, Collector; R. J. Cashien, Conductor; Mary Foulks, Warden; Sarah McGown, Inner Guard; Wm. Branby, Outer Guard, and J. M. Brickhouse and Thos. Patten, Board of Trustees. The ceremonies in connection with the Ladies Society were very nice, and they deserve compliments for the nice way they did their work. After the installation was over the sisters served refreshments, which were appreciated by all. Too much praise can not be bestowed on L. S. 80. This lodge is always doing something good.

Lodge 45, of Little Rock, Ark., is keeping abreast of the times. Since January 1st this lodge has admitted more than thirty new members, and they have many more ready to go in at any time that they present themselves for membership. It has about 250 members, which makes it one of the largest, if not the largest, in the Western territory. Let the good work go on, my brothers, without cessation. While in Little Rock I received instructions from the Grand Master to report in St. Paul, Minn., to Bro. H. B. Smith, General Chairman of the Northern Pacific Joint Protective Board. I did as requested of me. I found that my services would not be needed for a few days, and upon the earnest request of Bro. J. J. Cochran, General Chairman of the Great Northern Joint Protective Board, I visited a few lodges on the road under his jurisdiction.

On the morning of July 15th, at 10.30, we started for Melrose, Minn., arriving there at 1.50 p. m. After dinner we held a good meeting—in fact, one of the best that I have held in quite a while. The meeting was not as largely attended as it would have been had more time been given in notifying the members of my coming. I found the lodge in good condition and everything running along smoothly with them. The lodge has a good corps of officers, which accounts for the good condition of Lodge 224. Let me say right here, before I go any farther with my story, that good officers do make a good lodge. Nine times out of ten when a lodge is in a weak and sickly condition, the fault can be largely traced to some one in authority, who does not attend to the business of the lodge. One thing sure, a lodge can not run itself successfully. When left to shift for itself it soon goes to pieces. After spending a pleasant afternoon with the members of Lodge 224 I took my departure for Barnesville, Minn., arriving there about midnight. On the way to Barnesville we ran into a very heavy windstorm that lasted only a few moments, but it made things look squally while it did last. I never knew before that they had windstorms in Minnesota. I supposed that my native State of Kansas had all the honors in that direction. Bro. Cochran, in answer to my question, said he was not scared, but whether he was or not, he looked it, all the same.

Sunday morning, July 16th, dawned in good shape, with the weather pleasant. The church bells rang out the usual call for divine services, and many wended their way to houses of worship to do reverence to Him who "doeth all things well." In the afternoon a good meeting was held with Lodge 483, at Barnesville, Minn. The attendance was not large, but it was the best under the circumstances. Only passenger firemen can attend meetings of Lodge 483, owing to the fact that freight crews do not happen to lay over in Barnesville any more. It will become necessary to move the lodge to another division point, where it will be possible to hold larger and better meetings.

On Monday night following I held a well-attended meeting at Larimore, N. D., with Lodge 567. I found this lodge in very good condition and the members taking a great deal of interest in lodge matters. This is as it should be. Where interest is taken in lodge work there will you find a good lodge, and it is good lodges that we need in our business. I am sure that the meeting held in Larimore will be remembered for a long time to come.

Larimore was the end of my northwestern trip, and I can truly and honestly say that I have not seen any nicer country than North Dakota. Everything in the line of good crops looked so promising. Wheat, oats and flax prospects were never better than this year. This means plenty of work in sight for our members for this fall and coming winter.

I arrived in Breckenridge, Minn., on the afternoon of July 18th, and was met at the train by several of the members of Lodge 433. The evening was spent in looking at the sights of that pretty place. While there I went to the hospital of St. Francis and took a look at the beautiful room the lodge furnished, to be used by any member of the Order, in case it became necessary to go to the hospital for treatment. The room is furnished in a very creditable manner, and it speaks well for the members of Lodge 433. On that night a very nice meeting was held between the lodges of the Brotherhood and the Ladies Society. The Ladies Society in Breckenridge has not been in existence very long, but from the way the sisters take hold of it they are going to make a success of it. The sisters served refreshments after the meeting, which were enjoyed by all. I came away greatly pleased with my trip to that place, and hope I may have the privilege of going back again some day.

On July 19th, in the evening, at Wilmar, Minn., a good meeting was held with Lodge 95. While the meeting was not as largely attended as I would like to have seen, it was a good meeting. Owing to heavy business on the road, many of the brothers were unable to attend. Wilmar is the home of the efficient Secretary and Treasurer, Bro. Larsen, of the Great Northern Joint Protective Board. Bro. Larsen showed me his books, which are kept in a neat and creditable manner. The financial condition of the Great Northern Board is first class, which speaks well for the management of affairs on the road by the General Chairman and Secretary and Treasurer.

On Sunday, July 23d, beginning at 9 a. m., and lasting until noon, a good meeting was held with Lodge 296, Superior, Wis. I found the lodge in good condition, and was more than pleased with my visit to that place. Owing to the fact that business was good on the road it kept many away who would otherwise have been there. This was my first visit to this lodge, and I shall always remember the kindness shown me by the Master, Bro. Blair.

On the afternoon of July 23d a very nice meeting was held under the auspices of Lodge 519, presided over by Bro. H. B. Smith, who is also General Chairman of the N. P. R. R. Joint Protective Board. This was my first visit here, and I enjoyed it very much. After the meeting was over I started for Proctor Knott, Minn., accompanied by Bro. Blair. We wanted Bro. Cochran, General Chairman, to go along, but John had a date and could not break it. On our way there we met several members of the lodge at that place, who came to the top of the incline to meet us. After lunch we went to the lodge room, where we found about fifty of our members awaiting us. A good meeting was held, and everybody seemed to be satisfied with what they heard. Owing to the fact that it was necessary for me to be in St. Paul on Monday morning, I had to come away from Proctor Knott. Through the kindness of the members, who provided us with a wagon to ride in, we started for Duluth. The night was dark, the roads were very rough, and we did not make good time. Owing to the short time we had to make the Great Northern depot, we concluded to walk from the top of the hill to the street car line, a distance of about two miles. Bro. Blair and myself hit only high places as we came down the hill. It was awful steep, and we had a hard time to hold ourselves down. We managed to have one minute to spare when we got to the street car line before the car came, and I made my train just in time to get aboard before we started for St. Paul. It was a trip that I will never forget, and I don't think Bro. Blair will either. I appreciate his kindness in going to Proctor Knott with me. The brothers of Lodge 539 are to be congratulated for the splendid showing made at their meeting on Sunday night, July 23d.

As I write for the September issue of the Magazine the news is announced to me that Bro. Frank Dupel, a tried and true member of the Order, and one who has been in our Grand Lodge office as clerk for many years, was suddenly taken away by a stroke of paralysis. This is certainly sad news to me, as I have known him so long and knew of his sterling qualities so well. Bro. Dupel was always a busy man, and one who attended to his duties in a strict business way. I can remember him well the first time I met him, when he attended the Thirteenth Annual Convention, held in Minneapolis, Minn., in 1886. He was one of the most popular delegates in that convention. His sudden taking away is a shock to his family, whom he always thought so much of. I am sure that all those who knew him will join me in extending our heartfelt sympathy to the devoted wife and children of our faithful brother. "May he rest in peace." When we stop to think and reflect a moment, how we are convinced that death is cruel; how it comes when we least expect it, and sometimes least prepared to meet it. It seldom gives a warning of its readiness to take us off. To those who die a natural death and knew of the same, it must be a blessing; but to the many that do not have any warning that it is at hand it is something awful; but such is fate. There is one thing left, and that is to be ready to go at a moment's call.

I want to say with the ending of the meeting with Lodge 296, that closed my trip around the circle with Bro. Cochran, I appreciated his company and the many kindnesses shown me by him. One thing that speaks well for him is the splendid condition in which I found the affairs of the Board. Bro. Cochran as Chairman and Bro. Larsen as Secretary and Treasurer are the right men in the right place. They are both hustlers, and deserve praise for the manner in which they do their work. C. W. Maier.

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Fourth Vice Grand Master.

Stopping off at St. Thomas to meet with Lodge 5 at their regular session, I found a fair representation present and business of importance to every member being transacted. As this is our largest Canadian lodge and very active in Brotherhood affairs, it is needless to say that they keep everything up to date.

On arriving at Montreal I attended the regular meeting of Lodge 15, where I met with several of the members and assisted in adding to their membership. I am glad to report that the officers and members have placed this lodge where she rightfully belongs—among the banner lodges of Quebec.

I intended to visit Lodge 144, at Shawinigan Junction, but found that it would be impossible to secure enough for a meeting, as all their members are scattered on different parts of the road and on construction trains. However, their books and financial statement were placed before me, which show them to be in excellent standing.

At Hochelaga I was present at the regular meeting of Lodge 335, but found a very small attendance on hand. From those present I am led to believe that the members are keeping their finances in good shape, and doing all possible to increase their membership, but there is not the proper interest taken by attending meetings that there should be.

On going to Farnham to visit Lodge 134 I was pleased to meet so many of their members, and to observe the interest taken in all matters pertaining to our organization. On examining the Treasurer's books I found them kept in a very creditable manner, and showing a good balance on the proper side.

My next visit was to Richmond, with the members of Lodge 118, and as usual I found them up to date, endeavoring to upbuild and uplift our organization. As they have secured all eligible members, it goes to show that they have not been idle.

At Island Pond I held a splendid meeting with the members of Lodge 46 in about as comfortable a lodge room as could be desired. The lodge is largely composed of old members, and by the active part they are taking it shows they are not weary of well doing, and setting examples for our younger members to follow.

On going to Portland I was requested to have Bro. Tillson examined for his disability (paralysis), caused from an accident on the road where he had been employed. I also met in secret session with the members of Lodge 4, and am pleased to state that I found their books in excellent shape and the lodge composed of a whole-souled set of Brotherhood men. Great changes for the better have taken place within the past three years. I feel deeply indebted to several of their members for the many favors shown me while in their city.

From Portland I went to Bangor, and met in session with all available members of Lodge 514. The officers and members are to be congratulated upon the splendid showing during the past two years, having increased their membership and added to their finances in a very profitable manner.

At Brownville Junction I held an average meeting with Lodge 469, finding everything pertaining to the lodge matters well up to date, great interest taken and all our old members still remaining with our tried and true organization. I also paid a visit to Bro. O'Leary, who was allowed his disability at the last convention, and found him still bedridden, with very little improvement. Health is a priceless jewel.

On arriving at Houlton to visit Lodge 587, it was my sad duty to assist the members in laying to rest the remains of Bro. Wiberly, a respected member of this lodge. As this brother came in on his engine on Monday morning, in the best of health and in the prime of life, and died the following evening, it is a lesson for us who are left behind to profit by, as we know not how soon it will be our turn. A special meeting was held on our return to the lodge room, when suitable resolutions were passed, showing the high respect in which he was held by his brothers.

Going to Woodstock, I was able to hold the best meeting I have ever held with the members of Lodge 476, considering the boys are badly scattered at this point and no spare men available. At this meeting I was indeed glad to find the affairs of this lodge conducted in such excellent form, showing that the officers and members were not neglecting their duty, even if it is hard to hold regular sessions.

At Fairville I did not meet with as many members of Lodge 357 as I would have liked, nor perhaps as many as could have been present if a special effort had been made. Neither did I have the opportunity of instructing many of the members in our secret work, but I hope that when their new contemplated lodge room is ready and in a more central place, the efficient set of officers now in command will receive the hearty support that they deserve. It is true that the financial affairs of this lodge are excellent, but the social features and regular attendance are lacking.

My next stop was at Kintville, to visit Lodge 504 and meet all available members in secret session. As usual, everything was constitutional, all eligible members enrolled, not only on the Dominion Atlantic, but on the Halifax and Southwestern, as well; great interest taken and holding our organization in the greatest respect in this section of our territory.

In Truro I attended the largest meeting of members in any place this month. Lodge 171 is indeed deserving of a high compliment for its excellent condition and the interest shown by its members. I wish to extend my sincere thanks for favors shown me while in their city.

On my arrival in Sydney I was taken in charge by the members of Lodge 329, and from then till departure I passed a pleasant and very enjoyable time. Thanks to them for this courtesy. In the evening we had a very large attendance, every available member being present, and from their reports, books and knowledge of our ritual, I do not believe any members could accomplish any more in the short time they have been organized than these brothers in the extreme part of our Dominion.

A splendid meeting was held in the interest of Lodge 520, at Stellarton, where I found that, although they have lost some of their older members, yet they are doing business at the old stand, increasing in membership and a good bank account. It is always a pleasure to meet with this lodge and its members.

Accompanied by Bros. Phinny, Secretary and Treasurer of the I. C. R. Joint Protective Board, we journeyed to Moncton, and were there met by members of Lodge 233 and representatives of the Board. I attended the annual meeting of the Intercolonial Joint Protective Board, in Moncton, and was surprised to find so few cases to come before the Board—in fact, none of great importance—but when I was informed of the friendly feeling that exists between the employer and employe, besides the great desire to treat each other fairly, it solved the problem in my mind, and caused me to wonder, that if the same spirit was shown on all other systems of railroads, if it would not forever settle this long vexed question between capital and labor. As the same officers were re-elected for another term, it proves that their services have been perfectly satisfactory.

I had the privilege of meeting in special session with a fair representation of the members of Lodge 233, when a very pleasant and profitable time was spent. From the officers I learned that all business pertaining to lodge matters are better than ever before, but they would like to see more interest taken by a larger and more regular attendance at meetings. I was indeed sorry to learn that the Ladies Society at this point was not receiving the encouragement that they should, and naturally feel discouraged, but I believe that with the intended assistance and a special effort being put forth to secure members that this Society will flourish better than ever before, as its past record for assistance and sociability to the members of Lodge 233 can not be forgotten or ignored.

When I received notice of the expulsions for last quarter I could not help but feel grieved to think that so many of our members had neglected their duty to themselves, their families and their lodge by allowing their names to appear in that list, besides not showing their appreciation of the many benefits and privileges which they now enjoy. On the other hand, I concluded that our lodge officers had awakened to their duties by living strictly up to their constitution, and in so doing had placed the responsibility where it rightly belonged, instead of drawing from the lodge funds.

I can not help but note the great improvement in many of our lodges at the close of this, our fiscal year. A few years of this prosperity will mean that many of our members will be meeting in their own lodge rooms and deriving a revenue on their money invested, instead of the large outlay in rents, as at present, in many localities. May our organization prosper in this fiscal year better than ever before, is the wish of your humble servant.

E. A. BALL.

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Correspondence

Notice.

All letters or communications intended for publication in the Locomotive Firemen's Magazine must be accompanied by the name of the writer. If the writer of an article for publication desires that his or her name be withheld, such request will be complied with, but the correct name and address of the writer must be furnished this office as an evidence of good faith, otherwise no attention will be paid to same.

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LODGE 100—(Member, Nashville, Tenn.) No doubt the readers of the Magazine will be surprised to hear from this lodge, which was organized at Nashville, Tenn., on April 2, 1903. We have had some hard roads to travel since we organized, but are now on the road to prosperity. Not long after Bro. Shea got us in good order about fifty of the boys off the N. C. & St. L. Ry. decided to join this grand and noble Order, but the officials of that road told them that they would be discharged if they didn't withdraw from the Order. So in order to hold their jobs they couldn't get out of it fast enough. All but about twelve withdrew, and those who stayed in the Order were discharged for a violation of some rule on the time-table. Of course, you all well know that there is hardly a trip down in this country that something can not be found to discharge a man for. So this is the way they lost out. I guess all of the brothers are aware of the fact that the N. C. & St. L. Ry. and L. & N. Ry. are the only roads in the country that do not recognize the B. of L. F. But I hope that some day the B. of L. F. will be able to plant the flag on this long-fought battlefield with a victorious end.

We have also had our share of deaths in this lodge. Of course, it is very sad to have our worthy brothers depart from us in this life, but we should be ready to make the last run of life without a stop, until we have reached the union depot of heaven, where God will give us rest.

Brothers, we are working on a new road and have a fine lot of officials. This road is the Tennessee Central Railway, and is a good road to work on. It gets better all the time, and some day it will be a standard road. Success to the grand officers and all the brothers.

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LODGE 214—(J. D. Butler, Galveston, Tex.) The night of July 11th was spent in a most enjoyable way by the members of this lodge, and also of Lodge 45 of the Ladies Society, in having a joint installation of officers. In the absence of our Master, who was off on a vacation of pleasure, after appearing at the hymenial altar of bliss and happiness with one of Galveston's most estimable young ladies, Bro. C. W. Rodgers acted as Master in his stead, and it is needless to say that he ranks among the best in conducting meetings in compliance with the constitution. He is an able instructor, and well worthy of the confidence placed in him. Bro. Rodgers, in the Master's chair, was ably assisted by Sister Gilliam, in the President's chair, and by Sister Shellhorn, in whom the Ladies Society can well be in a position to congratulate themselves on their judgment in selecting these ladies as officers of trust, in whom confidence of the fulfillment of such can be placed. Business of the evening being dispensed with, we all adjourned to partake of a few refreshments, which were elaborately served by the ladies in attendance. Both lodges are loud in their praise of the success of the meeting and earnestly hope that they will so continue. Having elected and installed the officers for the coming year from the very best material, we are confident of a bright and successful future.

I sincerely wish our Brotherhood and members success and prosperity in the future.

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LODGE 238—(Member, Paducah, Ky.) Our lodge is still in existence and is here to stay. We have of late added quite a number of new members, and several more applicants are soon to be admitted. Our election is over and the new officers have been installed for the ensuing year. Now, brothers, put your shoulders to the wheel and try to help them out and give them plenty of encouragement. If at any time you see them in a dilemma, try and help them and advise them to the best of your ability, and under no consideration stand on the corners and criticise any mistake they might happen to make. Follow this rule and you will find out how much nicer it will be for every one concerned, and the officers will certainly appreciate it.

At last our efforts to organize a Ladies Society have been crowned with success, and I am glad to state that there has been quite a number of new members taken in since. Many thanks to Brother and Sister Roder for their untiring efforts in behalf of said society.

Work on the Paducah District of the I. C. is rather quiet at present and the boys are getting all the rest they need. I am sure they will need it if we are going to get the new class of engines the master mechanic has been telling us about. I extend my best wishes to our noble Order, and also the Ladies Society.

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LODGE 231—(J. K. Morris, Washington, D. C.) It is with great sorrow I announce that the grim reaper, Death, has visited our lodge and taken from our midst one of our noblest and truest friends and brothers, Samuel Cottrell. The death of Bro. Cottrell was very sad. At the time of his death he was firing fast freight between Wilmington, Del., and Jersey City, N. J. He made his last trip on engine 1394 on July 8th, and when within one mile of the terminal they had a rear-end collision, killing the trainman and injuring our brother so badly that he died two hours later in the Jersey City Hospital. His presence with us in our meetings was a tower of strength and encouragement, stimulating every one about him to put forth his best efforts. It mattered not where or when you would meet our departed brother, he always had a pleasant word or smile to greet you. We all feel his loss most keenly, and extend our heartfelt sympathy to the bereaved father and sister.

Lodge 602—(J. W. Wallen, Shawnee, Okla.) On of our beloved members, Bro. Peter T. Hannon, died on July 21, 1905, after a short illness, of typhoid fever. He was kind and generous, honest and upright, loyal to his friends, and possessed that love for wife and home, parents, sisters and brothers which makes one loved and admired by all, and which gave a true color to his life. He greeted every one with a pleasant word and smile. He was possessed of traits of character which it would be well for our younger brothers to imitate. It is hard for us to understand why such a life should be cut off in its prime. He has but met the common fate of man, and met it bravely. The members of Lodge 602 extend their heartfelt sympathy to the bereaved family. The writer can especially sympathize with his dear sister, as he has undergone a like experience.

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Lodge 463—(L. W. Oakley, Elmira, N. Y.) For the second time this year death has entered the ranks of our lodge, first taking Bro. S. H. Brundage, who was stricken with pneumonia in March, after a brief illness, and again calling for Bro. Robert Featherly, who was killed by a car while crossing the tracks at Southport yard to board a train for home. Bob had been seriously ill since January last with pleural pneumonia and had suffered intensely, but had never once given up the idea that he was going to get well, although the attending physician had given up all hopes of his recovery twice. Having recovered sufficiently to visit his parents, who reside at Sodus Point, he started for home, and stumbled in front of a car that had been kicked by a switch engine. Bob was as jolly a boy as one could meet, and was never known to be discouraged or discontented with his lot in this world, and we all mourn his loss as one we loved and respected. About twenty-five of our members accompanied the remains to Sodus Point, where they were laid to rest in the family lot. He is survived by his parents, two sisters and two brothers, to whom we extend our most sincere sympathy.

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Lodge 60—(Member, Philadelphia, Pa.) It gives me great pleasure to announce the prosperity of our lodge for the year just past. It has been one of the best years the lodge has ever experienced. Our attendance was better than in years gone by, and I would like to see the boys keep it up. Our goat is working overtime at present. At our last meeting he broke one of his horns, and the lad that rides our "Billy" will always remember how kind and gentle he is. He is such a fine fellow, always watching and waiting for a victim.

At the present time we have on file eight applications, and the applicants will be initiated at our next meeting. I hope the boys will keep the good work up, for they have a good field to work in. There is a large number of men working on our system who would make good B. of L. F. men. Now is the time to get them to join, and I hope that all of our brothers will take great interest in the lodge and assist the officers in their work, and see that the year to come will be the most prosperous that we have yet experienced.

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Lodge 368—(Member, Springfield, Mo.) I am glad to say that five of the boys have been called up for promotion. Four of them are members of our lodge, while the fifth is not a member of any lodge. I think every man who fires on the road should be a member of the Brotherhood. I am truly sorry to say that there are a few more who do not belong and are working on the same division.

Our attendance is not as large as it should be. We have all new officers for the coming year, with the exception of Bro. J. E. Baker, who was re-elected Treasurer, and was also elected to look after our little grievances. We think this was a wise choice, as Bro. Baker is a broad and fair-minded man. In the retirement of our Master, Bro. Huntress, we have lost a good, hard-working officer. We can say the same of our late Secretary, Bro. Dixon, and our Collector, Bro. Williams. We regret their retirement from office, in which capacity they served for the last three years, and hope their successors will do as well. We are sorry that there is no Ladies Society here, but hope to see one organized in the near future.

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Lodge 97—(Member, Los Angeles, Cal.) But few things could happen to a lodge more calculated to enthuse the Brotherhood spirit into its members than a visit from Third Vice Grand Master Maier. This was the pleasure of Lodge 97 on June 9th, and we are still enjoying the benefits of his coming. Before convening a desire on the part of the local lodge of the B. of R. T. to hear Bro. Maier was expressed in an unofficial way by some of their number, so after hurrying through our usual routine work, a committee was sent to invite them to an open meeting. Although busily engaged in considering and about to vote on important grievance work at the time, they adjourned and came over in a body. After an exchange of felicitations between the respective officials, we listened to an eloquent address by Bro. Maier, which aroused a degree of enthusiasm seldom seen, even in a lodge room.

The past history of the two great organizations was briefly, but impressively, reviewed; their long and successful struggle for living wages and just conditions of employment, their determined stand for industrial peace, their constant efforts to elevate and ennoble their respective crafts, and their loyal devotion to the highest ideals of domestic, civic and industrial life were feelingly referred to. The cordial relations between the two great organizations, their similarity of form, their interests in common and the friendliness of their members were touched on, and an appeal was made for continued harmony and good will.

After the lecture light refreshments were served in the banquet room, enlivened by spirited and pungent repartee, after which Bro. Maier continued his talk until a hasty adjournment was made to enable him to catch a late train for his next appointment at Bakersfield. The entire lodge accompanied him to the depot, and after an ineffectual appeal to the police department to keep him with us even for one more day, we bade him God speed.

It would be well if more such men could be put out among the subordinate lodges. The field has been so widely extended and the scope of their labors so broadened that they are unable to keep pace with the growing needs of the membership. All lodges are composed largely, some wholly, of apprentices in lodge work. They need frequent counsel from the seasoned intellects and ripened judgment of veterans who have come down to us from earlier generations of firemen. They need the experience these men have had in the lodge room, in committee, and in particular on Protective Boards. The greater part of the best of our seasoned timber has always left us at the time of their greatest value to us for another organization, and the loss of their influence can only be made up by that of a large and active force of efficient Grand Lodge field officers. This is a subject we should consider well and in all its details, and have our delegates prepared to take up and decide at Milwaukee next year.

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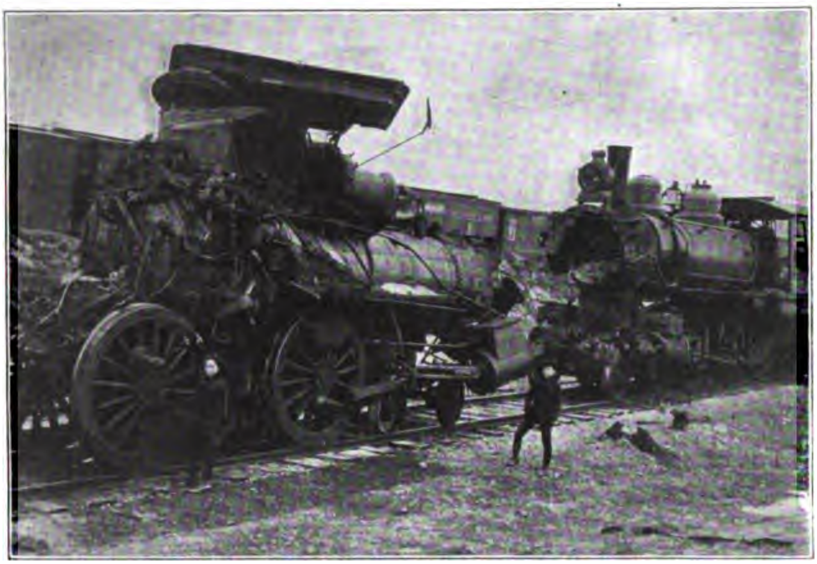
Lodge 492—(Member, Smithville, Tex.) We have been keeping the old goat busy for the past year, and now have only about six or seven more nonmembers working out of here. Business is very brisk and we have a pretty warm time of it when we couple into 900 tons of freight with our large engines and have to go up against these steep hills. The newly-elected officers for the ensuing year have all been installed and have entered upon their duties with the determination of making this lodge one of the foremost in the country. I am of the opinion that if we all do our duty there is no reason why it should not be. I sincerely wish all members success and hope to see the Magazine steadily grow.



WRECK ON THE ANN ARBOR RAILROAD MARCH 18, 1905, BETWEEN PASSENGER AND WORK TRAINS NEAR MESICK, CAUSED BY FAILURE TO OBSERVE A FLAG. BOTH FIREMEN WERE KILLED AND THE ENGINEERS WERE BADLY INJURED

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Lodge 33—(Don E. Irwin, Trenton, Mo.) There is quite a doubt in my mind as to the cause of the very changed condition of our lodge. One might safely call it a revival, and it was needed and came just in time, as our lodge was certainly getting stagnant.

Our annual election of officers took place June 29th and resulted in quite an interesting contest for several offices. Bro. J. H. Hudson, who has served us so faithfully in the past, was re-elected as Master, being chosen on account of his size, as it sometimes takes a rather good man to restore order during some of our arguments. Bro. John Lutz, on account of his sprinting ability, we elected to his second term as Collector. Some of the spirited chases he has had after the boys would be well worthy of mention.

At the present time we are getting the goat ready for business, and he should be ready to do business, as he has not been used for some time. Our weather at present and for the past few weeks has been very hot, making firing quite a proposition, and as it does not seem to have any effect on our tonnage, we simply grin and hunt the wash tub. We extend best wishes to all the members of our excellent Order, and should any of our brothers happen to stray around in our part of the country we will try and show them we are there with the goods.

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Lodge 293—(Member, Ottumwa, Iowa.) It is with pleasure, pride and praise for the past officers and loyal members of Lodge 293 that I let the brothers at large know that we are still in the game and "hittin' the ball." Bro. Richardson, former Secretary and Collector, is out of active railroad service and in business at Hayesville, Iowa, but we are pleased to know he is still with us in active lodge service. Former Receiver, Bro. Siltner ("Well, I'll tell you") will act as our daddy at the head of the list of officers of our now prospering little lodge for the ensuing year. Bro. Clark will keep us "square" with our worthy Grand Secretary and Treasurer in his role as Treasurer this year, succeeding Bro. Giltner, who has our hearty appreciation for his good work in the past as Treasurer. Bro. Cunningham will wrestle with the pen and collect the "dough" in his position as Secretary and Collector. Our old "war horse," Past Master Bro. Humble, is laid up with an injured foot, received in a collision at the Iowa Central crossing, Hedrick, Iowa, some time ago. Bro. Humble was in charge of the engine hauling passenger train No. 103 when he received his injury, and it is with sincerest sympathy that we feel for our "oldest of old" boys to see him out again as soon as possible.

We have been taking in new material of late and welcome our newly-accepted brothers with open arms. Last meeting day Bros. Butcher, Morris and "Bobbie" Yates rode the goat, and we trust they will "butt in" with interest on all lodge business, and come up to our expectations as good Brotherhood men. Business has been pretty fair, enough so that all the boys have found plenty of work, but owing to several work trains on the divisions, thereby keeping the boys out of town, attendance at lodge has not been very large in the past couple of months. None of our Grand officers have ever visited us, and we feel slighted, and wish to assure them that we have a good, steady lot of men here, and would be pleased to have some Vice Grand Master drop in on us some time in the near future.

Bro. Wm. Exclen will act as Chairman this year, and, owing to several little affairs he is trying hard to straighten out, I think a visit from a Grand officer would make a good impression in this locality, and Bro. Exclen would appreciate any advice or help tendered him by such Grand officer. Our general foreman, Mr. J. H. Little, is an official we all honor, and a man who is willing to do the square thing by the boys, so we consider ourselves very fortunate to have a man over us who has worked himself up from the left side of an engine to his present position. Furthermore, Mr. Little is considered a competent man by his superiors, which we think is surely due him.

To all brothers of our noble Order I extend a hearty welcome to our ranks, as I believe all "Milwaukee" boys are made of the right stuff, and, on the whole, a lot of "jolly good fellows."

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LODGE 175—(J. I. Dollison, Newark, Ohio.) I am called once more, and in seemingly a very short time, to again write in regard to the death of one of our most worthy and true brothers, John W. Parsons, who departed this life on June 21, 1905, at 2 a. m. Bro. Parsons was in his chair as Past Master and Collector of our lodge at our regular meeting on the night of June 20th, apparently as well and hearty as he ever was. He got home at 11 p. m., and at 12 o'clock I was summoned to his bedside to witness the last sad reality. He passed peacefully and quietly away at 2 a. m., June 21st, without one word or murmur.

Bro. Parsons had been in the active service of the Baltimore and Ohio Railroad Company since 1884, making twenty-one years. He was a true and loyal employe, and was a man loved and respected by all who knew him. He was kind and loyal, both to officials and employes. He was about forty-three years of age, and had served as a fireman for thirteen or fourteen years. No doubt he would have been running an engine but for a sad accident which he met with some six years ago, and in which he had his hip broken and came near losing his life. It left him a cripple, and, being a very large man, he did not care to take the responsibility of running an engine. He therefore took a job firing in the yard, and did his work well. He had been Collector for Lodge 175 for the last three years, and performed his duty well, his accounts being perfectly straight.

The funeral took place on June 24th, and his remains were laid to rest in the beautiful cemetery of Cedar Hill. The funeral services were conducted by the B. of L. F., assisted by the members of Minewa Tribe of Redmen, of which order Bro. Parsons was also a member. The pallbearers consisted of three B. of L. F. brothers and three Redmen, and we used both ceremonies at the grave. The floral offerings were large and beautiful. The funeral procession was headed by the Redmen, then came the Firemen, followed by a number of the Switchmen. We wish to extend a vote of thanks for their attendance. Bro. Parsons leaves a widow and three children, Mrs. Robt. Goodlet, residing in Vicksburg, Miss., and Dora and Albert Parsons, besides a large circle of friends to mourn his death. We as a body of the B. of L. F. brothers wish to extend the heartfelt sympathy of our entire membership to the grief-stricken family in this their hour of trouble.

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LODGE 246—(Member, Lake City, Fla.) I am with the Georgia Southern and Florida Railway Company, and we have some very good officials, although we have so far been unable to get our pay brought up to the standard. However, we think we will make it O. K. after a while. A few months ago the company gave us a small raise, which helped a great deal. All the boys are joining the Order as fast as time will let them.

There is only one drawback, and that is that we have an equal number of negro firemen along with the white. I believe, however, that in the course of time the railway companies of the South will see that the white man will save twice as much fuel as the negro, and be more profitable in every way. We have a fine set of engineers—they are each and all one of the boys. I am very sorry that I have not been able to meet with our lodge, as I would like to do, but I do all I can for them, if I am so far away—about 212 miles down in Florida, where the alligator hollers and the mosquitoes sing, although I find this State very healthy to a Georgian like myself.

Well, I will stop for this time, and will try and let the world know more oftener that we have a lodge in Macon, Ga., and that there is a railroad by the name of the G. S. & F. (Suwanee River Route). I see where Bro. Shea was in Macon with a few of our boys, and am glad to know that he was so pleased with our lodge and city. I hope he will make another visit soon and stay a little longer. I am with Bro. Higgins on the accident insurance question—think it is a nice thing—hope it will go through O. K.

Good-bye, and good luck to our great Magazine and Order.

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LODGE 570—(Louis J. Schultz, Cincinnati, Ohio.) Death has again visited our ranks and removed from our midst a beloved brother, Bro. Frank Seibel, who died on July 3, 1905. Bro. Seibel leaves a wife and one small child to mourn his death. He was one of the number of new members taken into Lodge 570 in the last six months. Although we are sad and sorrowful to have so good, bright and promising a life taken so suddenly from our midst, we think of him as one who has gone to receive his reward, and we must bow to Him who doeth all things well. His family has received resolutions of condolence from his lodge, and has the sympathy of all who knew him. His remains were laid to rest at Delhi, Ohio, ten of our brothers paying him their last respects by attending the funeral. We extend to the bereaved ones our heartfelt sympathy.

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Lodge 662—(Member, Victoria, Tex.) Our lodge is just a year old, and, like other young lodges, has room for improvement. With our small membership and several branch runs that hold the boys away from home, our meetings are poorly attended.

Our Past Master has chosen his life partner, and they have started on life's journey together. Congratulations to "Vic."

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Lodge 512—(C. E. Edgar Wooden, Jr., Hagerstown, Md.) We were honored on July 6th with a visit from Bro. Shea, our Second Vice Grand Master. We spent a few enjoyable hours with him and he gave us a fine talk. We appreciate his visit very much and hope that he will come this way again soon. We had Bro. A. T. Jenkins, General Chairman of the N. & W. System, with us at our last meeting. We had hoped for quite a speech from him, but the proceedings of the lodge kept us until such a late hour that he just had time to catch the train for Roanoke. Bro. Jenkins installed our officers and gave our newly-elected Master some points in connection with his office.

Our Master, Bro. N. O. Shoemaker, while not a shoemaker by trade, can use the gavel with as much force as a cobbler hammers the last. As yet he is new in the business, but after a few meetings we feel satisfied that he will have Lodge 512 living up to the rules much better than heretofore. I hope the boys will manifest more interest in the lodge and attend more regularly.

We had three visitors from our sister lodge, No. 645, at our meeting of August 2d, and we were certainly pround to have them with us. They showed us some of the spirit of Lodge 645, Bro. Downey especially. He has indeed missed his vocation. Instead of a railroad man he should have been elected to Congress. A question was agitated in which we all took a great interest, and Bro. Downey, in a 45-minute talk, enlightened us considerably, and proved conclusively that his heart and mind are wholly with the Brotherhood. He is a credit to our grand old Order.

One of our boys has placed himself in quite a serious predicament, I fear. It is not necessary to mention his name—all interested will know to whom I refer. While attending the convention in Buffalo he proposed marriage to a sister delegate from Norwich, N. Y., in the presence of two witnesses. It seems that he proved false to the fair lady, for he married a Hagerstown maiden a few months ago. I indeed hope that the Norwich lady whom he has treated so rudely, and who perhaps on his account has heaved many a heart-broken sigh and shed many a bitter tear, in her suit for breach of promise will be very lenient with this brother. Of course, she is aware of the fact that he is an imported Englishman and a son of nobility. We would respectfully ask her to leave him the one castle on the outskirts of London and the money on deposit in the Bank of Liverpool. If there is a lawyer among the Brotherhood boys I wish he would correspond with this brother through myself. We may employ him when the case is taken to court. As I said before, news is scarce, so I will close.

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Lodge 208—(Member, Susquehanna, Pa.) I am glad to state that we are steadily growing in membership. Bro. Worth, our worthy Master, is laid up with a broken thumb, and is not able for duty. It has been very noticeable of late how handy Bro. Madigan is becoming with the baby carriage. Bros. Kosinsky and Lims are spending a few days' vacation in the country. Bro. Joe Chalker looks very becoming walking behind the baby buggy. Bro. Kelly, our able Collector, is always on the hustle to keep things in good running order. Business is steadily picking up on the Erie and the boys are kept very busy on the half decks, firing with a poor grade of coal. The number of cars to the train is being increased, and only recently a train left here containing 126 cars and having but two brakemen. This is becoming rather fierce, and it looks as though they will soon be coupling onto the whole earth.

Brothers, if you ever happen our way just drop in on us, and I assure you that you will meet as jolly a set of men as you ever care to.

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Lodge 535—(S. G. Lucas, Secretary, Chicago, Ill.) In my letter from this lodge in the August Magazine I endeavored to give you a short history of the lodge from the date of its organization, May 25, 1898, up to the past year, ending June 30th, which year I think we are entitled to call the "banner year" since the existence of the lodge. Now I shall further give you a little more history relative to the meetings held each year from the year 1898 until the year ending June 30, 1904. The average number of meetings were 11 per year, and as I have no statistics stating the number of members present at each meeting, I will be unable to give you a general average of attendance.

From July 1, 1904, to June 30, 1905, we held 26 meetings, two of them being special meetings. The total attendance for the year was 525, and the average attendance per meeting would be 20 members. This certainly speaks well for the lodge, and shows the interest the members each and all have taken in its welfare. I will now endeavor to give you the financial report of the standing of this lodge June 30, 1905:

Bro. Sriner, the Collector, in his report, shows that he collected $1,849.30, and paid into the treasury $1,849.30.

Bro. Galligan, the Treasurer, in his report, shows a balance on hand July 1, 1904, of $25.05, and he received from the Collector $1,849.30, making the total receipts $1,874.35.

The disbursements from July 1, 1904, to July 1, 1905, were $1,515.26, making a balance on hand July 1, 1905, of $359.09. The amount of $54.25, later paid in by Bro. Sriner, Collector, would make a total balance on hand July 1, 1905, of $413.34.

The above record certainly speaks well for the management of the lodge by its officers, also the interest and earnest support which the members have given the officers of their lodge.

I also desire to announce the marriage of Bro. John L. Sweeney, which took place on July 17th. As Bro. Sweeney did the matter up so quietly, I am unable to give any further details regarding the affair, but nevertheless we wish himself and wife a long and happy life.

I also wish to announce that at the meeting held on August 8th we had the pleasure of entertaining Bro. C. B. Morelock, of Springfield, Mo. Also Bro. Weeks, of Elm City Lodge 284, of New Haven, Conn.

Brothers, you are well aware of the fact that there are quite a number of firemen employed on the Chicago Division who are at the present writing eligible for membership, and I think with a little earnest effort on your part, that you ought to be able to convince them of the advantages the Brotherhood affords them, as the goat has certainly had a good rest, and no doubt he desires a little exercise, so now do your best to furnish him with a few candidates.

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'Tis Easy To Be Good

When others toil that we may rest
And walk that we may ride,
And humbly bow to fate's behest
Whilst we in wealth abide;
When those we hire do not repine
But all our laws obey,
And grant to wealth a right divine
Nor dare dispute its sway—
'Tis easy to be good.

Though other lives are wrapped in gloom
Our own warm hearts are bright,
Our children's rosy faces bloom
Whilst theirs are touched with blight;
Though homeless men may roam the town
In want and penury,
When we repose on beds of down
Secure in luxury—
'Tis easy to be good.

When anxious cares do not oppress,
But each day brings us gain
From those who toil, we must confess
Our road to wealth is plain;
Though others know life's keen distress,
Our conscience feels no stain,
True Christian love we still profess
Regardless of their pain.
'Tis easy to be good.

"The fittest must survive" we know,
Legitimate the plan
For one to drink the dregs of woe
Brewed by his fellowman;
To toil without a just reward
Is labor's own estate;
We tell the men whose fate is hard
We've naught to arbitrate—
'Tis easy to be good.

When others build a beauteous home
And we possess the deed,
They may as homeless renters roam,
Harassed by debt and need;
We go to church self-satisfied,
In feathers fine arrayed,
To learn of Christ the Crucified
On whom our trust is stayed.
'Tis easy to be good.
—Margaret Scott Hall, in the Carpenter.

Official

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

Geo. D. Buck.—Is a fireman, but does not belong to the Brotherhood. When last heard of was at Shawnee, Okla. He weighs about 200 pounds. Any one knowing his whereabouts will please correspond with J. F. Wood, member of Lodge 275, B. of L. F., Raton, N. M.

Pat Horan.—Is Irish and speaks broken English. When last heard of he was in Emporia, Kas., going to the Northwest. He did not at that time belong to the Brotherhood. Any one in possession of any information will please correspond with J. F. Wood, member of Lodge 275, B. of L. F., Raton, N. M.

O. O. Reynolds.—Was promoted on the Colorado and Southern Railroad at Trinidad about two years ago, after firing there a while. He then quit there and went South. When last heard of he was running an engine in Old Mexico. He is dark complexioned, has black hair, black eyes and black mustache. Any one knowing his whereabouts will please correspond with J. F. Wood, member Lodge 275, B. of L. F., Raton, N. M.

Robert Senate.—Sometimes goes by the name of his step-father, "Liel." Is a member of the Brotherhood. He has not been heard from for a long time. His mother is very ill and, the doctors say, has but a short time to live. She is very anxious to see him. Think he was in San Pedro, Cal., when heard from last January. He is rather short and heavy set; has blue eyes, dark or brown hair; is about 35 years old. Any information regarding him will be thankfully received by Windslow J. Perry, member Lodge 109, B. of L. F., 2301 Eugenia street, St. Louis, Mo.

Emmit Benedict.—Is a member of Lodge 298, B. of L. F., residing at Atchison, Kas. Was a switch fireman on the Atchison, Topeka and Santa Fe Railroad, and disappeared from home June 27, 1905. His wife is much worried about him and can not account for his absence. When he left home he wore gray pants, black coat and black felt hat. He is five feet nine inches tall; weighs 150 pounds; has large gray eyes, brown hair, smooth face, and is twenty-four years old. Any one knowing his whereabouts or any information concerning him will please correspond with his wife, Mrs. Emmit Benedict, South Seventh street (between Utah avenue and Park street), Atchison, Kas., or H. H. Hill, Secretary, Lodge 298, B. of L. F., 14 North Speer avenue, Argentine, Kas.

Fred Houk.—Formerly a member of Lodge 57, B. of L. F., Boston, Mass. The last place he worked was on the Wabash Railroad, Chicago, Ill. He is 29 years old. Has light complexion and weighs about 180 pounds. His wife has been ill and is very anxious to hear from him. Any information concerning him will be gratefully received by Mrs. Fred Houk, 1818 Washington street, Suite 7, Boston, Mass.

John Freitag.—Is a member of Lodge 240. When last heard from he was in the City of Mexico, in July, 1903. His parents are very anxious to hear from him. Any one knowing his whereabouts or in possession of any information concerning him will please correspond with A. W. Turner, Secretary, of Lodge 240, B. of L. F., 314 East Mason street, Jackson, Mich.

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Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possession of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the lodge which issued same:

Traveling card No. 5292, for quarter ending June 30, 1905, and B. of L. F. receipts for the quarters ending September 30, 1904, December 31, 1904, March 31, 1905, and June 30, 1905; also, deposit check for $205, belonging to W. H.

Herman, member of Lodge 467, B. of L. F., has been lost. It is reported that a man by the name of Stanton has been using traveling card and name of W. H. Herman. If found or located please report to W. C. Berkholtz, Secretary, Lodge 467, B. of L. F., Box 244, Albuquerque, N. M.

Traveling card No. 18990, issued July 1st, signed by R. P. Hinze, Secretary, and B. T. Stanton, Master, of Lodge 295, limitation, September 30, 1905; description, medium, gray eyes and red hair: together with above was a receipt for $6.50, signed by R. L. Banfield, bearing order for secret work, has been stolen from Joseph Meaden, member of Lodge 295. If found please return to R. P. Hinze, Secretary, Lodge 295, Box 384, Raton, N. M.

Card case containing traveling card and receipts good until June 30, 1905; Santa Fe pass from Las Vegas, N. M., to La Junta, Col., good till June 25, 1905: also a Pacific Mutual Life Insurance Company card, and a Y. M. C. A. meal ticket good for $2, belonging to R. B. Cox, member of Lodge 314, Hoxie, Ark., has been lost. Any one finding it will please return to R. B. Cox, Hoxie, Ark.

Pocketbook containing receipts for past quarters, as well as for quarter ending September 30, 1905, belonging to E. V. Kelly, a member of Lodge 663, B. of L. F., was lost while on a trip from Otis, Cal., to Las Vegas, Nev. If found please return to R. A. Somers, Secretary Lodge 663, B. of L. F., 120 North Anderson street, Los Angeles, Cal.

Bank book on the Farmers National Bank, of Springfield, Ill., also receipts for three years, order for works for the quarter ending September 30, 1905, and traveling card for the last quarter, No. 8323, belonging to A. Boulware, member of Lodge 49, B. of L. F., has been lost. If found please return to W. L. Dwelley, Secretary of Lodge 49, B. of L. F., Angle Hotel, Decatur, Ill.

Lodge receipt No. 10, issued to James Craddock, member of Lodge 323, B. of L. F., for dues ending September 30, 1905, with order for the works attached, has been lost. If found, please return to E. E. Hazard, Secretary, Lodge 323, B. of L. F., Minturn, Col.

Pocketbook containing lodge receipt for the quarter ending September 30th and grand dues ending December 31, 1905, belonging to Fred C. Dizard, member of Lodge 535, B. of L. F., was lost on August 9th. Any one finding same will please communicate with S. G. Lucas, Secretary of Lodge 535, B. of L. F., 4340 Princeton avenue, Chicago, Ill.

A brown leather suit case containing clothing and papers belonging to D. G. Huddlestun, supposed to have been left either in a boarding house or express office in Texas, Arkansas or Louisiana. Mr. Huddlestun was killed in a railroad accident February 5, 1905. Any information regarding same will be thankfully received by his sister, Miss Daisy Huddlestun, Covington, Va.

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The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of July, 1905:

B. of L. F. Lodges 4, $5: 21, $10; 28, $5: 29, $5; 32, $5; 34, $10; 79, $4.50; 86, $3; 87, $10; 102, $5; 107, $10; 124, $20; 138, $5; 183, $5; 204, $5: 230, $5; 274, $10: 296, $25; 310, $5; 318, $10; 334, $10: 347, $5; 361, $5; 381, $10; 407, $5; 428, $10; 481, $5: 488, $5: 489, $2; 502, $5; 542, $2.25; 553, $2: 557, $10: 589, $2.50: 629, $10: 648, $8.50. Total.	$259 75
L. S. to B. of L. F. Lodge 56...	5 00
O. R. C. Divisions............	554 17
B. of R. T. Lodges............	598 60
B. of L. E. Divisions..........	692 25
L. A. T. Lodges...............	12 00
L. A. C. Divisions............	9 50
G. I. A. Divisions.............	10 00
Rebate on printing............	16 86
James Costello, Division 270, O. R. C....................	1 00
N. B. Travis, Division 1, O. R. C.	1 00
L. E. Smith, Division 1, O. R. C.	1 00
A. W. Connors, Division 1, O. R. C......................	1 00
J. A. Dockens, Division 1, O. R. C.	1 00
Wm. Willis, Division 459, O. R. C.	1 00
D. B. Gordon, Division 497, B. of L. E...................	5 00
Charles E. Young, Division 230, B. of R. T................	10 00
J. S. Hardenberg, Hornellsville, N. Y......................	1 00
Ladies Railroad Social Club of South Chicago, Ill..........	10 00
Members of Lodge 439, B. of L. F.....................	4 00
Grand total...............	$2,194 13

Respectfully submitted,

JOHN O'KEEFE,
Sec. and Treas., R. R. M. H.

Beneficiary Statement

To Subordinate Lodges:

Office of Grand Secretary and Treasurer,
Peoria, Ill., August 1, 1905.

The following is a statement of receipts in the Beneficiary Department for the month of July, 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	488 25	69	78 75	137	107 25	205	107 25	273	195 75	341	188 25	409	......	477	252 00	545	88 50	613	43 50
2	......	70	171 75	138	336 00	206	58 50	274	118 50	342	203 25	410	162 00	478	183 00	546	48 75	614	223 50
3	864 75	71	260 25	139	312 00	207	......	275	291 00	343	45 00	411	201 00	479	78 75	547	58 50	615	103 50
4	240 00	72	365 25	140	417 00	208	93 00	276	205 50	344	229 50	412	134 25	480	40 50	548	73 50	616	57 00
5	276 00	73	331 50	141	493 50	209	......	277	108 75	345	152 25	413	60 75	481	217 50	549	...	617	87 75
6	356 25	74	162 00	142	280 50	210	64 50	278	27 00	346	29 25	414	159 75	482	123 00	550	61 50	618	27 75
7	......	75	......	143	320 25	211	255 00	279	68 25	347	106 50	415	123 75	483	63 00	551		619	90 00
8	514 50	76	32 25	144	30 00	212	129 75	280	136 50	348	......	416	174 75	484	150 75	552	152 25	620	72 00
9	330 00	77	369 75	145	144 00	213	184 50	281	198 75	349	302 25	417	79 50	485	824 25	553	175 50	621	54 00
10	771 75	78	135 00	146	330 00	214	334 50	282	33 75	350	110 25	418	257 25	486	114 75	554	85 50	622	171 75
11	259 50	79	73 50	147	174 75	215	345 00	283	116 25	351	33 00	419	117 75	487	...	555	83 25	623	111 00
12	......	80	167 25	148	180 75	216	138 00	284	620 25	352	117 75	420	87 75	488	69 00	556	....	624	96 75
13	311 25	81	124 50	149	513 00	217	204 00	285	365 25	353	125 25	421	73 50	489	141 00	557	211 50	625	45 75
14	371 25	82	270 75	150	271 50	218	219 00	286	10 50	354	258 00	422	93 75	490	169 50	558	140 25	626	
15	103 50	83	....	151	102 75	219	......	287	837 75	355	183 75	423	54 00	491	77 25	559	78 75	627	58 50
16	391 50	84	164 25	152	240 00	220	483 00	288	99 00	356	307 00	424	109 50	492	236 25	560	94 50	628	74 25
17	162 75	85	225 00	153	137 25	221	189 00	289	150 00	357	....	425	78 00	493	78 75	561	109 50	629	33 75
18	......	86	249 00	154	153 75	222	147 00	290	125 25	358	106 50	426	360 75	494	123 00	562	249 75	630	82 50
19	180 75	87	165 75	155	64 50	223	......	291	98 25	359	61 50	427	77 25	495	84 75	563	174 75	631	90 00
20	52 50	88	147 00	156	206 25	224	98 25	292	43 50	360	107 25	428	80 25	496	78 00	564	153 75	632	51 00
21	266 25	89	......	157	80 25	225	66 00	293	85 50	361	124 50	429	183 00	497	118 50	565	51 00	633	96 75
22	96 00	90	78 00	158	108 75	226	285 75	294	177 75	362	....	430	139 50	498	114 00	566	144 75	634	198 00
23	120 75	91	255 00	159	183 75	227	68 25	295	216 00	363	390 75	431	101 25	499	44 25	567	93 00	635	117 75
24	285 75	92	140 25	160	171 75	228	417 75	296	222 00	364	126 75	432	197 25	500	84 00	568	129 00	636	54 00
25	301 50	93	......	161	44 25	229	292 50	297	220 50	365	57 75	433	61 50	501	156 75	569	127 50	637	52 50
26	212 25	94	346 50	162	458 25	230	548 25	298	168 00	366	78 75	434	156 75	502	211 50	570	63 00	638	105 75
27	250 50	95	45 75	163	145 50	231	366 75	299	141 75	367	114 75	435	129 75	503	138 00	571	127 50	639	72 75
28	156 75	96	....	164	96 25	232	229 50	300	189 75	368	128 25	436	244 50	504	46 50	572	66 75	640	52 50
29	......	97	285 75	165	69 00	233	206 25	301	111 75	369	......	437	......	505	62 25	573	147 00	641	102 75
30	203 25	98	234 75	166	280 50	234	150 00	302	325 50	370	39 75	438	122 25	506	134 25	574	132 00	642	92 25
31	126 75	99	540 00	167	114 75	235	212 25	303	128 25	371	......	439	99 00	507	116 25	575	60 00	643	57 75
32	157 50	100	96 75	168	180 00	236	337 50	304	205 50	372	131 25	440	177 00	508	249 75	576	.....	644	51 00
33	153 00	101	......	169	357 00	237	394 50	305	81 75	373	132 00	441	.....	509	74 25	577	100 50	645	80 25
34	193 50	102	123 75	170	140 25	238	301 50	306	273 00	374	213 00	442	107 25	510	171 00	578	125 25	646	190 50
35	134 25	103	168 00	171	129 00	239	16 50	307	173 25	375	61 50	443	119 25	511	195 00	579	77 25	647	......
36	150 75	104	145 50	172	69 00	240	337 50	308	84 00	376	68 25	444	261 00	512	86 25	580	13 50	648	44 25
37	189 75	105	96 75	173	280 50	241	286 50	309	462 75	377	161 25	445	126 75	513	142 50	581	21 00	649	28 50
38	111 00	106	48 00	174	652 50	242	256 50	310	216 75	378	583 50	446	250 50	514	96 00	582	91 50	650	34 50
39	115 50	107	234 75	175	440 25	243	103 50	311	......	379	309 00	447	87 75	515	......	583	63 75	651	84 00
40	309 75	108	......	176	136 50	244	171 00	312	196 50	380	50 25	448	633 00	516	.....	584	93 00	652	69 00
41	39 75	109	215 25	177	163 50	245	102 00	313	112 50	381	249 75	449	363 50	517	48 75	585	106 50	653	93 00
42	39 75	110	126 00	178	221 25	246	194 25	314	174 75	382	125 25	450	264 00	518	45 75	586	68 25	654	49 50
43	192 00	111	180 75	179	141 75	247	303 75	315	158 25	383	132 75	451	140 25	519	145 50	587	153 00	655	34 50
44	272 25	112	52 50	180	11 25	248	273 75	316	226 50	384	158 25	452	100 50	520	49 50	588	57 00	656	98 25
45	544 50	113	164 25	181	42 75	249	186 00	317	75 75	385	85 50	453	49 50	521	128 25	589	60 75	657	62 25
46	69 75	114	68 25	182	351 00	250	170 25	318	20 25	386	49 50	454	174 75	522	191 25	590	.....	658	86 25
47	......	115	72 00	183	195 75	251	......	319	134 25	387	72 75	455	195 75	523	101 25	591	185 25	659	53 25
48	332 25	116	......	184	......	252	344 25	320	78 75	388	186 75	456	120 75	524	30 75	592	.....	660	69 75
49	180 00	117	120 75	185	85 50	253	231 00	321	84 00	389	129 00	457	159 75	525	88 50	593	45 75	661	39 00
50	69 00	118	59 25	186	6 75	254	112 50	322	55 50	390	157 50	458	50 25	526	32 25	594	128 25	662	48 75
51	153 00	119	107 25	187	113 25	255	57 00	323	64 50	391	187 50	459	66 00	527	133 50	595	52 50	663	85 50
52	289 50	120	191 25	188	407 25	256	70 50	324	86 25	392	449 25	460	88 50	528	143 25	596	126 00	664	62 25
53	103 50	121	279 75	189	244 50	257	......	325	51 75	393	183 75	461	119 25	529	154 50	597	84 75	665	71 25
54	325 50	122	59 25	190	22 50	258	36 75	326	.....	394	20 25	462	176 25	530	93 00	598	93 00	666	....
55	60 75	123	229 50	191	237 00	259	78 75	327	292 50	395	119 25	463	187 50	531	99 75	599	61 50	667	39 75
56	171 00	124	172 50	192	347 25	260	158 25	328	.....	396	193 50	464	123 00	532	81 00	600	116 25	668	87 75
57	556 50	125	63 75	193	68 25	261	59 25	329	58 50	397	75 75	465	195 75	533	99 75	601	155 25	669	89 25
58	201 75	126	....	194	389 25	262	210 00	330	258 75	398	85 50	466	92 25	534	390 75	602	165 00	670	132 00
59	403 50	127	225 00	195	117 00	263	151 50	331	108 75	399	117 00	467	94 50	535	151 50	603		671	59 25
60	330 75	128	98 25	196	60 75	264	72 75	332	112 50	400	211 50	468	30 00	536	100 50	604	34 50	672	69 00
61	147 75	129	281 25	197	84 00	265	404 25	333	263 50	401	234 00	469	112 50	537	66 75	605		673	521 25
62	125 25	130	398 25	198	354 75	266	234 00	334	216 75	402	99 75	470	191 25	538	160 50	606	39 00	674	
63	175 00	131	54 75	199	129 75	267	114 75	335	33 00	403	59 25	471	36 75	539	141 00	607	69 75	675	49 50
64	243 00	132	131 25	200	81 75	268	55 50	336	105 75	404	82 50	472	309 00	540	.....	608	110 25	676	27 75
65	189 00	133	......	201	286 50	269	144 00	337	288 75	405	198 75	473	53 25	541	114 00	609	54 75	677	44 25
66	132 00	134	132 75	202	207 00	270	......	338	142 50	406	171 25	474	105 00	542	171 00	610	47 25	678	54 00
67	162 00	135	166 50	203	216 75	271	107 25	339	66 00	407	213 75	475	106 50	543	244 50	611	60 75	679	40 50
68	136 25	136	42 75	204	195 00	272	66 75	340	143 25	408	182 25	476	......	544	136 50	612	71 25	680	56 25

Received during month of July $100,441.25

Disbursed during month of July, account Beneficiary Claims ....

3....	$3,000	$9,000	$67,000.00
2....	2,000	4,000	
35....	1,500	52,500	
1....	1,000	1,000	
1....	500	500	

Respectfully submitted,

W. S. CARTER,
G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from June 30, 1905, to July 31, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid
1025	Harry Dike	389	Death	May 1, 1905	Derailing of engine	$1,500	July 18, 1905
1026	B. F. Goodnow	57	“	“ 13, “	Striking bridge	1,500	“ 18, “
1027	J. Arthur Stafford	360	“	“ 9, “	Collision	1,500	“ 18, “
1029	Harrison P. McBee	430	“	“ 3, “	Falling from moving eng	1,500	“ 18, “
1030	Joseph Roberts	226	“	Apr. 23, “	Falling from moving eng	3,000	“ 18, “
1031	William Oltman	32	“	May 17, “	Typhoid fever	1,500	“ 18, “
1033	Charles M. Souers	462	“	“ 11, “	Collision	1,500	“ 18, “
1034	Paul Lee	572	“	“ 12, “	Dysentery	1,500	“ 18, “
1035	Arthur J. Duncan	129	“	“ 24, “	Typhoid fever	1,500	“ 18, “
1036	William Houghton	129	Disability	“ 31, “	Locomotor ataxia	1,500	“ 18, “
1037	M. A. Baird	386	Death	“ 20, “	Derailing of engine	1,500	“ 18, “
1038	Edward W. Blake	192	“	“ 6, “	Falling from mov'g train	1,500	“ 18, “
1039	William H. Phillips	202	“	“ 26, “	Heart disease	1,500	“ 18, “
1040	Alfred Seymore	444	“	“ 23, “	Collision	2,000	“ 18, “
1041	Sidney F. Bell	502	“	“ 18, “	Collision	1,500	“ 18, “
1042	Fred'k W. Hammill	673	“	“ 29, “	Bright's disease	1,500	“ 18, “
1044	John Watson	117	“	“ 25, “	Heart disease	1,500	“ 18, “
1045	George I. Reid	15	“	“ 13, “	Falling from moving eng	500	“ 18, “
1047	Valeo Lambert	653	“	“ 26, “	Collision	1,500	“ 18, “
1048	William B. Williams	408	“	“ 25, “	Hemorrhage of lungs	1,500	“ 18, “
1051	Albert Simmons	208	Disability	June 6, “	Paralysis	1,500	“ 18, “
1052	George W. Gray	310	Death	May 31, “	Scarlet fever	1,500	“ 18, “
1053	Elmer Deo	265	“	June 2, “	Small-pox	1,000	“ 18, “
1054	Fred G. Coryell	401	“	May 29, “	Crushed beneath engine	2,000	“ 18, “
1055	Ulysses S. Babb	447	“	“ 15, “	Derailing of engine	3,000	“ 18, “
1057	Edison P. Allison	139	“	“ 23, “	Derailing of engine	3,000	“ 18, “
1058	Marshall M. Miller	158	Disability	June 9, “	Consumption of lungs	1,500	“ 18, “
1059	William J. Loeffler	129	Death	May 29, “	Typhoid fever	1,500	“ 18, “
1062	James W. Sheets	6	“	June 6, “	Derailing of engine	1,500	“ 18, “
1065	Richard J. Costello	363	“	“ 5, “	Cirrhosis of liver	1,500	“ 18, “
1067	Henry P. Derra	150	“	May 30, “	Appendicitis	1,500	“ 19, “
1069	J. Percy Eastwood	341	“	Apr. 29, “	Collision	1,500	“ 19, “
1068	Lanceley K. Scott	341	“	“ 29, “	Collision	1,500	“ 19, “
1072	John H. Mead	276	Disability	June 9, “	Amputation right foot	1,500	“ 19, “
1073	Otis Williams	534	Death	“ 8, “	Measles and tonsilitis	1,500	“ 19, “
1075	Merton W. Piatt	169	“	“ 11, “	Fell under moving train	1,500	“ 19, “
1078	Floyd J. Ingalls	71	“	May 27, “	Bronchial pneumonia	1,500	“ 19, “
1079	Jay W. Wheaton	25	Disability	Apr. 22, “	Amputation right foot	1,500	“ 19, “
1080	Charles S. Elliott	175	Death	June 9, “	Pulmonary tuberculosis	1,500	“ 19, “
1050	M. P. Hagerty	177	“	May 15, “	Tetanus	1,500	“ 19, “
1082	Joseph Gale	246	“	“ 19, “	Pulmonary hemorrhage	1,500	“ 19, “
1066	August Schroeder	25	“	June 3, “	Consumption of lungs	1,500	“ 19, “

42 death and disability claims, aggregating $67,000.

Pending Claims July 31, 1905.

71 death claims aggregating	$98,750
16 disability claims aggregating	23,500
Total of 87 claims aggregating	$122,250

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Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending August 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1125	Charles W. Lang	240	Death	July 17 1905	Appendicitis	$1,500
1126	Michael Gennoy	149	"	" 17, "	Consumption of lungs	1,500
1127	Reinhold Redemsky	431	Disability	" 17, "	Paralysis	1,500
1128	Will E. Severance	425	Death	" 17, "	Drowning	1,500
1129	B. L. Norman	602	Disability	" 18, "	Fractured arm	1,500
1130	William C. Richardson	133	"	" 18, "	Blindness	1,500
1131	Jacob Nunemaker	11	Death	" 19, "	Heart disease	1,500
1132	John Hollick	148	"	" 20, "	Cancer of stomach	1,500
1133	John Lee	250	"	" 20, "	Knife wound in neck	1,500
1134	Thomas A. Lilly	222	"	" 21, "	Concussion of brain	1,500
1135	Isaac N. Chandler	455	"	" 22, "	Crushed between engine and car	1,500
1136	William F. West	560	"	" 22, "	Derailing of engine	500
1137	W. H. Price	402	Disability	" 24, "	Stomach and liver trouble	1,500
1138	Robert F. Michael	557	Death	" 25, "	Collision	1,500
1139	Eugene L. Ahn	562	"	" 25, "	Struck by moving engine	1,500
1140	L. W. Smith	80	"	" 26, "	Fractured skull	1,500
1141	Frank E. Dupell	16	"	" 27, "	Apoplexy	1,500
1142	James C. Hall	380	"	" 27, "	Gunshot wound	1,500
1143	George Poell	277	Disability	" 27 "	Amputation left foot	1,500
1144	George Steiner	97	Death	" 27, "	Tetanus	1,000
1145	John W. Thomas	62	"	" 27, "	Collision	1,500
1146	T. J. Scholes	391	Disability	" 27, "	Cancer	1,500
1147	M. J. Campbell	169	"	" 27, "	Amputation right foot	1,500
1148	James Walters	71	Death	" 27 "	Cerebral hemorrhage	1,500
1149	Wm. Scharf	508	"	" 28, "	Natural causes	1,500
1150	William Morrisey	215	"	" 28, "	Typhoid fever	1,500
1151	Earl A. Brandon	382	"	" 28, "	Boiler explosion	1,500
1152	Arthur Cockwill	631	"	" 29, "	Derailing of engine	1,500
1153	William Parrett	521	"	" 29, "	Collision	1,000
1154	George F. Wills	464	"	" 29 "	Typhoid fever	1,000
1155	Samuel Cottrell	231	"	" 31, "	Collision	1,500
1156	Hugh T. Farrow	367	"	" 31, "	Crushed between engine and car	1,500
1157	John W. Wibberly	587	"	" 31, "	Peritonitis	1,500
1158	Thomas C. Moriarty	401	Disability	Aug. 1, "	Bright's disease	1,500
1159	Charles E. Wild	508	"	" 1, "	Consumption	1 500
1160	Henry J. Watson	521	Death	" 2, "	Derailing of engine	1,000
1161	Edmund R. Carnes	620	Disability	" 2, "	Apoplexy	1,500
1162	Newton A. Dean	609	"	" 2, "	Consumption of lungs	1,500
1163	Peter F. Hannon	602	Death	" 2, "	Inflammation of brain	1 500
1164	William H. Allen	540	"	" 3, "	Derailing of engine	1,500
1165	John Wessel	582	Disability	" 3, "	Blindness	1,500
1166	John J. Simmons	446	Death	" 3, "	Tuberculosis	1,500
1167	James A. Clark	99	"	" 3, "	Scalded	1,500
1168	Clarence B. Bryant	327	"	" 4, "	Boiler explosion	1,500
1169	John Taylor	546	"	" 5, "	Derailing of engine	1,500
1170	Geo. W. Conant	401	"	" 5, "	Drowning	1,000
1171	Roger B. Price	194	"	" 5, "	Drowning	1,500
1172	Thomas J. McGrath	101	"	" 9, "	Phthisis	1,500
1173	W. M. Felton	6	Disability	" 10, "	Amputation of right foot	1,000
1174	John Crouse	10	Death	" 10, "	Cancer of stomach	1,500
1175	Charles E. Heichemer	10	"	" 10, "	Derailing of engine	1,500
1176	George Cambridge	263	Disability	" 10, "	Bright's disease	1,500
1177	James H. Gilliam	302	Death	" 11, "	Consumption of lungs	1,500
1178	Rubie Hill	530	Disability	" 11, "	Blind one eye; hips crushed	1,000
1179	John A. Lucas	287	Death	" 12, "	Boiler explosion	1,500
1180	Isaac E. Muse	633	"	" 12, "	Collision	1,500
1181	Arch Doolin	45	"	" 12, "	Derailing of engine	1,500
1182	William N. Horton	45	"	" 12, "	Derailing of engine	1,500
1183	William J. Miller	182	"	" 14, "	Derailing of engine	1,500
1184	Harry E. Brown	192	"	" 14, "	Run over by engine	1,500
1185	Roy A. Hayward	248	"	" 15, "	Collision	500

NOTE.—Death claims 1064, William Fogarty, Lodge 378, published in July issue of Magazine and 1122 published in August issue are duplicates; claim settled as death claim 1122, and No. 1064 is made void.

Respectfully submitted,

W. S. CARTER,

G. S. and T.

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Quarterly Dues Notice

OFFICE OF THE GRAND LODGE, B. OF L. F.
PEORIA, ILL., September 1, 1905.

To Members of Subordinate Lodges:

SIRS AND BROTHERS—You are hereby notified that the dues for the quarter ending December 31, 1905, are now payable and must be paid to the Collector of your Lodge on or before October 1, 1905. Said dues shall be such an amount as may be determined by the several Lodges, provided, in no case shall it be less than nine dollars and fifty cents ($9.50) for each member carrying a beneficiary certificate of three thousand dollars ($3,000), six dollars and fifty cents ($6.50) for each member carrying a beneficiary certificate of two thousand dollars ($2,000), five dollars ($5.00) for each member carrying a beneficiary certificate of fifteen hundred dollars ($1,500), three dollars and fifty cents ($3.50) for each member carrying a certificate of one thousand dollars ($1,000), and two dollars ($2.00) for each member who shall carry a certificate of five hundred dollars ($500). All beneficiary members now enrolled, and those admitted prior to November 1, 1905, are liable for the dues above referred to. All members initiated during the months of November and December will be exempt from the payment of dues for the said quarter, as provided in Section 171 of the Constitution. Beneficiary members initiated during the month of October are liable for the full amount of quarterly dues for the above quarter. All officers and members are earnestly requested to give the foregoing their careful and strict attention, and govern themselves accordingly. Any member failing or declining to make payment as above provided will be subject to the penalty of expulsion from the Order, as per Section 173 of the Constitution, said expulsion taking effect October 2, 1905.

Yours fraternally,
W. S. CARTER, G. S. and T. J. J. HANNAHAN, G. M.

Notice to Treasurers

OFFICE OF THE GRAND LODGE, B. OF L. F.
PEORIA, ILL., September 1, 1905.

To the Treasurers of Subordinate Lodges:

SIRS AND BROTHERS—You are hereby notified, as provided in Section 63 of the Constitution, that no beneficiary assessment is required for the month of September, 1905, and that therefore none has been levied for said month.

Yours fraternally,
W. S. CARTER, G. S. and T. J. J. HANNAHAN, G. M.

Notice to Secretaries

OFFICE OF THE GRAND LODGE, B. OF L. F.
PEORIA, ILL., September 1, 1905.

To Secretaries of Subordinate Lodges:

SIRS AND BROTHERS—Pursuant to Section 173 of the Constitution, you are required to report to the Grand Lodge as expelled all members who fail to make payment of their Quarterly Dues for the quarter ending December 31, 1905. The names of said members must be reported to you by the Collector of your Lodge not later than October 2d, and by you reported to the Grand Lodge, as per Section 173 of the Constitution, immediately thereafter. Failing to report the names of expelled members as herein provided, the Grand Lodge will hold subordinate Lodges liable for their assessments, as per Section 66 of the Constitution.

Yours fraternally,
W. S. CARTER, G. S. and T. J. J. HANNAHAN, G. M.

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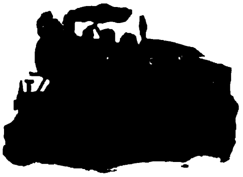

LADIES SOCIETY of the B.L.F.

Agnes G. Strong—Editress.

FRIENDSHIP — AND — CHARITY

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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From the Grand President.

Important.

The attention of the officers and members of all lodges, especially the Collectors, is directed to the various laws governing the payment of quarterly and grand dues and the penalties provided for failure to comply therewith.

In the third paragraph of Section 86, defining the duties of the Collector, it provides: "It shall also be the duty of the Collector to report to the Secretary of the lodge, as expelled on the second day of the second month of each quarter, . . ." It would apparently seem that this was in conflict with the other sections, providing that, a member failing to pay her dues, be they grand or quarterly, on or before the first day of the quarter, will be suspended on the second day of the said quarter, and, failing to make payment within sixty days from the date of such suspension, she will be expelled, and be so reported by the Secretary to the Grand Secretary and Treasurer. The word "second" should have been *third*, so that the section should read ". . . the second day of the third month of the quarter." The intent of the law is, that unless a member makes payment of her dues within sixty days from the date of her suspension, she shall be reported expelled by the Collector to the Secretary, and the Secretary shall *immediately* file a report of such expulsion, with cause and date thereof, with the Grand Secretary and Treasurer, and at the next meeting thereafter a report of the expulsion shall be made to the lodge. The expulsion takes place immediately at the end of the sixty days provided by law, and it should be promptly reported, as above indicated.

The law contemplates that when the Treasurer forwards to the Grand Secretary and Treasurer the assessments for the usual quarterly assessment, there shall have been filed by the Secretary a report of all expelled members. The Collector and Secretary do not wait for a meeting of the lodge to make their respective reports of expulsions, but they are required to file them, as provided by law, at the end of the sixty days. If a Secretary defers making her report of expulsions for nonpayment of dues to the Grand Secretary and Treasurer until after a meeting of the lodge has been had, the object of this provision of law will be defeated. It was for the purpose of preventing confusion between the office of the Grand Secretary and Treasurer and the Treasurers that this law was framed.

In Section 107, page 63, on the fourth line, of the Constitution, another typographical error occurs. It states, "It shall be the duty of the Collector to report the said expulsion to the Secretary of the lodge, as provided in Section 84; . . ." The section intended to be referred to in this connection is 86, defining the duties of Collector, and not 84, defining the duties of Vice-President. While these errors may lead one to believe that a conflict exists, if the members will read the laws as a whole, which is the only proper way to correctly interpret them, it will be readily seen that the intent of the law is very plain.

Under the present laws it is contemplated that expulsion for nonpayment of dues shall not take place until the end of sixty days from the date of suspension. While it is true that the status of a member under suspension is practically the same as that of one expelled, so far as her right to receive the benefits of membership is concerned, there is this difference: a suspended member can regain her membership by making payment of the amount for which she is delinquent before the expiration of the sixty days provided by law, while the expelled member must regain her membership by applying as a new member. Of course, should a member while under suspension meet with an accident, the result of which might be fatal, she could not, by the mere tendering of the dues, regain her membership and, in the event of her death, her beneficiary or beneficiaries receive the amount stated in her insurance certificate.

It is suggested that the officers and members correct the mistakes referred to herein by changing the word "second" in Section 86 to read "third," and "84" in Section 107 to read "86."

Grand Dues.

There seems to be a misapprehension on the part of many of our officers and members as to the application of the laws governing the payment of grand dues and making returns therefor to the Grand Secretary and Treasurer. Section 105 requires that the Treasurer shall forward her returns on grand dues so as to reach the Grand Secretary and Treasurer on or before the 10th day of July and the 10th day of January, respectively. If a member fails to pay her grand dues as is required by law, she stands suspended. Of course it is understood that no Collector is permitted to accept quarterly dues only and give a receipt therefor unless the full amount is tendered. This applies to the quarters when the grand dues are due and payable. A lodge has, say, twenty members, fifteen of whom pay their grand dues, and the remainder are suspended. The grand dues should reach the office of the Grand Secretary and Treasurer on or before the 10th day of July, for instance. The Treasurer should indicate on her grand dues statement the members who have failed to make payment of grand dues. This can also be supplemented by a statement being attached to the grand dues statement, giving the names of the members who are delinquent on grand dues and stating that if payment thereof is made by the said members before the expiration of the sixty day limit provided by law, that the amount thus collected as grand dues will be forwarded with the returns on the next quarterly assessment. Should any of the members fail to make payment, then a report of their expulsion, as provided in Section 107, should be immediately filed by the Secretary with the Grand Secretary, so that when the said returns are received by that officer, she can properly credit the amount thus forwarded, and the grand register will then show the exact standing of each member of the Society.

If the officers and members will kindly bear this in mind when the grand dues are due and payable, much confusion will be saved, both in their lodge and in the office of the Grand Secretary and Treasurer.

It is to be regretted that, notwithstanding the care exercised when reading proof on the new Constitution, errors crept in. Fortunately they are not of a very serious nature, as the context of the Constitution, taken as a whole, plainly indicates what the laws contemplate. To interpret our laws we must read them as a whole and not pick out a section or a line to fit particular cases.

Installation and Past President.

The query has been asked, "If our Past President is absent and there is no Past President at the meeting, who shall act as installing officer?" If such a condition should arise in a lodge, then the officer appointed for the time being to fill the Past President's chair can act as the installing officer. If need be, the President-elect, who is succeeding herself, can install the officers, and she in turn can be installed by some sister appointed to act as installing officer. In the case of an officer succeeding herself and she is absent at the meeting at which installation takes place, she can be installed at any subsequent meeting, as she will hold office until her successor is duly elected and installed. In her case she succeeds herself.

Emblem Pins.

Under a new arrangement made with the manufacturer of the official emblem pins which are furnished the lodge, it will be necessary that the money shall accompany all orders which may be placed with the Grand President for said pins. The pins will be furnished at the following prices:

Fourteen karat plain gold pins, $3.25 each; 14k Past President's pin, with bar, $4.50 each; filled gold plain pins $1.25 each, and filled Past President's pin, $2.75 each. The price quoted for Past President's pin includes the engraving on the bar or hanger.

To avoid delay in the filling of orders for these pins, the officers and members should send the necessary amount with their order.

G. M. Sargent, G. P.

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Hawaii—Its Plantations and Volcanoes.

Leaving San Francisco at 1.00 p. m. of June 7, 1905, on the Pacific Mail Steamship Company's magnificent new twin screw, 27,000 ton steamship "Mongolia," after a very pleasant voyage across the Pacific Ocean, we reached Honolulu on the morning of the 13th. While it is true that usually one meets with rough seas the first night out from San Francisco, and we had our share, but on account of the size of the boat, and the fact that we were asleep, we knew practically nothing of the high waves which, we were informed next morning, were dashing up against its sides.

About the third day out, summer clothing was exchanged for the heavier grade required by the bracing air of San Francisco, especially when the fogs are rolling through the Golden Gate. The officers of the ship appeared in their white duck uniforms, which added to the attractiveness of the scene on board. The white uniforms of the officers and flying fish usually go together. A careful watch was kept for the latter, but it was not until toward the close of the fourth day that the bow of the "Mongolia" began to stir them up, and from that on until we reached Diamond Head they were always in evidence.

About 5.30 a. m. of the morning of the 13th, we passed Molokai, noted for its leper settlement, and within three hours we were lying off Honolulu, awaiting to be boarded by the quarantine officer and by him permitted to land. On account of the size of the "Mongolia" it is not possible to land her passengers at the dock, especially if the tide is out. At full tide she can make the landing, but to save time and possible delay on account of tides, when she begins her western trip to the Orient, she usually anchors out in the channel. As Congress has made an appropriation for deepening the channel at Honolulu, the time is not far distant when all vessels can enter and be docked without fear of grounding.

Honolulu is located on the Island of Oahu, and it is the principal and capital city of the Territory of Hawaii. Here practically all of the business of the Territory is transacted. While it is true that the Island of Oahu has but 600 square miles, while the Island of Hawaii has 4,210, in point of population it is the largest, having, in 1900, a population of 58,504, while Hawaii had 46,843. The Hawaiian Islands consist of the following: Hawaii, Maui, Oahu, Kauai, Molokai, Lania, Niihau and Kahoolawa, with a population of 154,001.

Sugar cane is the principal product of the Territory. While it is true that pineapples and Mexican sisal or fiber plant, from which a very fine grade of twine and rope is made, are raised, as well as coffee in limited quantities, sugar predominates. Here one will see sugar plantations covering over seven thousand acres. Up to within a short time the raw sugar was sent to the coast for refining, but the Honolulu Mill, located on the Island of Oahu, has begun to refine, and arrangements have been made by the Planters' Association to refine their own product and market it from San Francisco.

There is a well-equipped narrow gauge railway running from Honolulu to Kahuku, winding in and around the shore line for a distance of 84 miles. Branch lines are run into the mills, where the sugar, in bags, is loaded into the cars and brought to tide-water, where it is shipped to the main land.

In and around Honolulu there are many points of interest. The drive to the Nuuanau Pali is intensely interesting and picturesque. The Pali is one of the historic spots of the island. The word "pali" is the Hawaiian word for precipice. It was through this valley that Nuuanau Kamehameha, the Conqueror, pursued the army of the King of Oahu, driving hundreds of his warriors over this precipice. The Bishop Museum contains many exhibits which are of especial ethnological interest. The Aquarium is one of the most interesting places on the island one can visit. Here one will see specimens of the fish taken from the waters surrounding the islands. The shapes and variegated colors are beyond my powers of description.

Space does not permit me referring to the many other interesting sights to be seen on this island, and especially in and around Honolulu.

On June 20th we sailed on the "Kinau" for a trip to the other islands, leaving Honolulu at noon. Strenuous is not adequate to explain or to express the kind of a trip one has in going from Honolulu to Hilo, the principal city on the Island of Hawaii, a distance of about 222 miles from Honolulu. While our trip was, so we were told, remarkably smooth, and while it may be true that this steamer has been fitted with bilge keels to keep her steady, one must admit that the trip is far from being smooth or placid. One rather amusing feature of the trip was that, as soon as we would get out into rough water, the Chinese steward would pass through the ship, sounding the gong, calling the passengers to meals. It requires no stretch of imagination to picture the expression on the faces of those who have given up all hope, and other things. The crew of the ship—that is, outside of the stewards—were mostly native Hawaiians. It is not believed that there is a better class of sailors in the world than the Kanakas. They are as much at home in the water as they are on land. When a steamer arrives at Honolulu it is immediately surrounded by Kanaka boys, who dive for the coins thrown into the water by the passengers. It is rare, unless the water is muddy, made so by low tide and the vessel stirring up the bottom, that they ever fail to bring up the coin. Therefore, while the trip may be rough, one can place confidence in the ability of the natives to get one ashore in the event of an accident occurring.

Our first stop was at Kamalo, on the Island of Molokai. On the other side of the island is located the leper settlement, of which much was written at the time of the death of Father Damien. There is but little land under cultivation on this island, other than for grazing purposes. The hunting, so we were told, is quite good, there being plenty of deer, goats, Chinese pheasants, wild dogs and other game. Directly across from Molokai is the Island of Lanai, while in line with it, separated by the Pailolo Channel, is the Island of Maui, the second largest in the group.

Our first stop on the Island of Maui was at Lahaina. On account of its topographical location, it being sheltered from the trade winds which are constantly blowing across the islands, this is one of the hottest spots in the Territory. All of the landings, except the one at Hilo, on the Island of Hawaii, are made in the small lifeboats of the steamer. Should there be any cattle on board they are made to swim ashore, as was done the next morning at Maalaea Bay. We took advantage of these stops to appear for dinner in the dining-room. Next morning, as there was much freight to be landed at Maalaea Bay, and, having some business to transact with the Federal officer stationed at that port, we went ashore, and later on we had the pleasure of eating a finely prepared home breakfast at this officer's home. At this port there is a wireless telegraph station, which communicates with the other islands, on which are also located similar stations.

After making a few more stops on the Island of Maui, we steered for the Island of Hawaii. It is on this island where one will witness some very interesting and rather exciting landings. The coast line of the side of the island we went up is rather precipitous, and freight is, at several points, landed and taken on board by means of a cable. At one point the passengers are loaded in a cage and then swung up the high bluff. The scenery along this island is very beautiful. Over twenty waterfalls were counted, each contributing its quota of water to the Pacific. A large ditch, known as the Kohala ditch, is now being constructed to catch this water and send it to those parts of the island where there is practically no water, and where the cattle very often die by the scores for want of it. There is one particular stop on this island which is of unusual interest to the passenger, especially if he or she is a poor sailor. It is called Laupahoehoe. Here the boat anchors in the trough of the sea, while the freight and passengers are landed. There are times when it is impossible to make the landing, on account of the high surf. It is remarkable to see with what ease the natives make these landings, which are narrow and winding, while on each side are sharp-pointed boulders of lava. On the trip up one of the passengers stood it very well until this spot was reached, when "they" had to finally give in. While our party, with but one exception—and this exception was a gentleman who lives on the islands and makes the trip at certain intervals—managed to pull through without being seasick, the fact is that we no doubt were able to do so by keeping to our berths while the boat was in rough water. One of our party facetiously called it "Walloppyhoehoe," while he renamed the "Kinau" and called it the "Bronco." However, the trip was a never-ending panorama, with its lights and shadows and the ever-changing colors of vegetation on shore.

About 4.30 of the afternoon of the next day after our sailing from Honolulu we entered the harbor of Hilo, which is the most characteristic of any of the landings in the Territory. On the left going in is Cocoanut Island, named so on account of the number of cocoanut palms which grow on it. These give it the ideal tropical appearance, and which is somewhat different from the impression one gets approaching Honolulu, as there is no evidence of the palms along the shore; but of course there are plenty of magnificent palms inland.

Shortly after landing we inspected the mills of the Hilo Sugar and the Waiakea mills companies, after which we drove out to Rainbow Falls. These falls have a drop of 135 feet, and the scene is one that will not soon be forgotten by those who are fortunate enough to witness it.

On the Island of Hawaii one finds conditions somewhat different from those on the other islands. In fact, the same conditions do not exist on the different islands. On the Island of Oahu practically all of the cane is cultivated by means of irrigation, which involves the expenditure of large sums of money for pumping machinery, etc. On the Island of Maui there are a series of ditches representing an expenditure of about two and one-half millions of dollars. On Hawaii the rainfall is constant. It is believed that there is hardly a day in the year when some rain does not fall. The water is so plentiful in and around Hilo that instead of the cane being brought to the mills in cars, as is done on all of the plantations of Oahu, a system of flumes has been built, which brings the cane directly to the crushers. In the Nuuanu Valley, outside of Honolulu, one is very often directed, when seeking to find a certain house, "to get off at the second shower and turn to the left," on account of there being an almost constant precipitation, no doubt caused by the currents of hot air striking against the sides of the mountains. Still, the rainfall there is nothing compared to that on the Island of Hawaii.

The next morning we boarded the train at Hilo, en route to the volcano. This railway runs through plantations, both cane and coffee, tropical forests, where one will see many tree ferns and wild bananas growing. Arriving at Glenwood, which is about 22 miles from Hilo, we found awaiting us (thanks to the courtesy of Mr. C. C. Kennedy, of Hilo, who accompanied us) a three-seated carriage, to carry us the remaining 10 miles to the Volcano House. The trip over the Volcano Road was very interesting. It is a gradual incline from Hilo to the Volcano House, which is located at an elevation of 4,000 feet. All kinds of tree ferns and tropical plants lined the road, which was of lava.

Arriving at the Volcano House and standing on its porch, one was struck dumb in amazement with the scene which was presented. Directly in front of the hotel could be seen the floor of the crater, while to the right were the sulphur beds, from which steam was ascending.

Our first visit was to the sulphur beds, and the sight was remarkable. At certain places the ground would be covered with pure sulphur, while at times the steam from the fissure was quite thick, and the heat, which could be felt by one placing one's hand over the fissure, was sufficient to cook eggs. By a system of piping this vapor is brought to the baths connected with the hotel, where one can take a genuine sulphur vapor bath furnished by Nature.

After dinner we drove through the tree fern forest. Here was a wonderful, yet beautiful sight unfolded to our gaze. In all directions could be seen gigantic tree ferns. We then drove through the coa forest, the wood from which is made into tables, doors, gourds and other useful articles, all of which are highly polished, the wood being susceptible to a very high and rich polish.

At four that afternoon, mounted on sure-footed ponies, we began the steep descent to the lava floor. From the Volcano House to this floor there is a drop of about 350 feet. The trail across the lava bed is blazed with stones, which leads to a corral erected for the use of the horses. The ride from the hotel to this corral is several miles, and it winds in and out, over crevices which seem to have no bottom. To the saddle was strapped a lantern, to be used on the return trip to guide the horses in following the trail. Arriving at the corral, we turned the horses over to the guide, after which we began to take our bearings. To the right of us steam was arising from the sulphur beds, while a little distance beyond was the Devil's Kitchen, so called. Here one can boil eggs, broil a steak or cook a dinner. It was here that the guide left the can of coffee, which was afterward heated and formed part of our lunch at the mouth of the crater.

OUR GREATEST VOLCANO IN ERUPTION

Kilauea, the monster volcano on the Island of Hawaii, is now in a state of unusual activity. The large cone on the right in the photograph was created on Easter Day, and has been named Easter Cone. The one on the left is now the chief center of activity

(Courtesy of Collier's Weekly, New York)

We then proceeded toward the volcano proper—Kilauea, as it is called. Its area is 4.14 square miles; circumference, 7.85 miles; extreme length, 2.93 miles; extreme width, 1.95 miles. The principal focus of activity is near the middle of the main crater, the principal cone of which has been named by the natives "Halemaumau," meaning the house of fire. Standing on the brink of this crater and listening to the blowing of the gases, which would suggest an engine blowing off with 200 or more pounds pressure, and watching the wonderful work of Nature, words fail one to adequately describe the scene. From the brink of the crater to the bottom is about 800 feet. Realizing that the full effect could not be had until it was dark, we made a tour of inspection of the many channels made by the flow of the hot lava. The guide securing a ladder, we descended about fifteen feet into what is known as Madam Pelee's Parlor. Here one finds a very curious formation. Around the sides was a bench-like formation, while above it was a table-like formation. We left our cards on Madam Pelee's card receiver, and proceeded to continue our explorations. Near the Devil's Kitchen is a wide fissure, about ten feet deep, from which steam is constantly issuing. Here one can have the full benefit of a vapor bath without the necessity of entering the usual enclosure.

As soon as it was sufficiently dark to bring out the full effect of the crater we proceeded to its brink. Looking down one could see large pieces of lava thrown ten or twenty feet into the air, while there would be a series of concussions and explosions. The sight was wonderfully grand, yet fearful. One could not help but think of the forces of nature which were then at work. In the meantime our guide had heated our coffee over one of the crevices at the Devil's Kitchen, and, sitting there and looking down at the crater, we ate our lunch.

About 8 o'clock we began the return

trip. With Mr. Kennedy leading, each rider holding his lantern so that its light would be reflected on the trail for the benefit of the horse, we arrived at the hotel about an hour later, all agreed that it was the most wonderful, yet fearful, sight ever seen.

The last time when Kilauea was sufficiently active to completely fill the crater and have it flowing over the lava bed was, it is believed, in 1894. At that time many witnessed what must have been a never-to-be-forgotten sight.

Some distance from Kilauea is Mauna Loa, another volcano, which has been quiet for several years. Its principal crater is called Mokuaweoweo. This is a much larger crater than that of Kilauea. Its circumference is 9.47 miles; length, 3.7 miles, and width, 1.74, while it is at an elevation of 13,675 feet. Let the reader imagine this crater active, as it has been on several occasions, the last time threatening to wipe out the town of Hilo, the lava coming within a quarter of a mile of the town.

My pen is too feeble to do full justice to the wonderful manifestations of nature which one will see on a visit to the volcano at Hilo. It is like many of the places of interest on the mainland, such as Niagara Falls—to appreciate it one must see it personally. F. P. SARGENT.

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Recipe for a Happy Life.

Three ounces are necessary, first of patience,
Then of repose and peace; of conscience
A pound entire is needful;
Of pastimes of all sorts, too
Should be gathered as much as the hand can hold;
Of pleasant memory and of hope three good drachms
There must be at least. But they should moistened be
With a liquor made from true pleasures which rejoice the heart.
Then of love's magic drops a few—
But use them sparingly, for they may bring a flame
Which naught but tears can drown—
Grind the whole and mix therewith of merriment an ounce
To even. Yet all this may not bring happiness
Except in your orisons you lift your voice
To Him who holds the gift of health.
—Written by Margaret of Navarre in 1500.—The Standard.

The Ten Largest Lodges.

Below is given the membership of the ten largest lodges in the Ladies Society, as reported August 1, 1905:

1. No. 142, Empire, Buffalo, N. Y., 127.
2. No. 70, Holly, Buffalo, N. Y., 105.
3. No. 3, Hazel, Peoria, Ill., 86.
4. No. 60, Pride of 174, Harrisburg, Pa., 82.
5. No. 146, Virginia, Chicago, Ill., 77.
6. No. 58, Sisters of 99, Rochester, N. Y., 75.
7. No. 125, Charity, Jackson, Mich., 71.
8. No. 10, Helpmate, Elkhart, Ind., 68.
9. No. 113, Ft. Orange, Albany, N. Y., 66.
10. No. 51, Grayson, Tex., 60.

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Notes.

Without any special request other than this, will every member of the Ladies Society and every lodge having an article for publication send it to the Magazine—not later, but as soon as this comes to your notice. We need variety and plenty of it. Now is the time for printing literary matter—stories, poems, papers, etc., that you may have on hand.

Dear Sisters, remember that all resolutions for and obituaries of deceased relatives of L. S. are excluded entirely from our Magazine. Their publication is prohibited by the Constitution of the B. of L. F., and the Magazine can not give the space, because relatives of the nearest kin die in nearly every Society monthly.

It is always to be remembered that the "Letters from Friends" must reach this office by the 5th of the month. First come, first printed.

Sisters, one thing is absolute. No letter unsigned by your journalist or any member of your Society will appear in the Magazine. Let that sink into your minds. The reasons are ample, and any letter unsigned will be sent back to your corresponding secretary, for we must know who writes, and your name must be known by the Editress if your letter is printed. There need be no matter printed you can not see over your name. If you do not wish your name printed a request from writer is all that is necessary, and we will use what name you say, if you drop a line, telling us.

Admonish in sisterly love.

Do you spend your spare moments in improvement of yourself and Society?

How long is it since you secured an application for membership in your Society, sister? Did it ever occur to you that a continuous effort for the good of the Order on your part would do wonders in building up your Society and the Order generally?

The member who joins a fraternal insurance society will find in its lodges and outside of them, too, that association and sociability which helps to make life pleasant. He will find a good time occasionally. But these are not the chief benefits to be derived from membership. The best of all is the knowledge that he is protecting those who are dear to him.

The secretary of a lodge should notify the Grand Secretary and Treasurer when a member marries. The change of name may result in a great deal of unnecessary correspondence.

Why do you, or why do you not, go to lodge meetings?

We are indebted to the B. of L. F. committee of the Canadian Union Meeting for an invitation to attend the various entertainments given during their Union Meeting, which convenes in Toronto, August 8, 9, 10, 1905. There will also be meetings of the Ladies Society at the same time and in the same place. We regret our inability to attend, but covet for them a pleasant and profitable session.

"Half the failures of life are caused by the failure to do things now. People are afraid to trust the procrastinator. They can't count on him, and so pass him by. Do things now."

"None Such" is the name of a new lodge to be organized August 2d at West Springfield. Its number will be 200.

If at any time of your life you have moments of discouragement, never mind. Try again. What you have not attained by patience at once, you may attain by patience and perseverance. Remember the hero Bruce and his spider. Depend upon it, the right way of thinking is to be urged on, to be spurred on by difficulties, not discouraged. Do not stick at a stile and say you can't go farther. Jump over it and see what you find beyond.

"Nine-tenths of the worry of life is borrowed for nothing. Do your part; never leave it undone. Be industrious; be prudent; be courageous. Then throw anxiety to the winds. Sufficient unto the day is the evil thereof. Therefore, do not borrow any for tomorrow."

Don't be discouraged in your lodge work. If you have trials, bear them, for "if thou faint in the day of adversity, thy strength is small."

Strive to make a good record as you journey through the labyrinth of human life.

Some one has said, "There is no permanence of fame or honor except that found in the labor for the happiness and good of others."

Whatever is right, defend; whatever is wrong, condemn.

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The Grand Trustees.

The trustees of the Ladies Society of the Brotherhood of Locomotive Firemen have returned to their homes, after carefully going over the books and accounts of the Grand Secretary and Treasurer, Sister Mary E. DuBois, of Boone, Iowa. A copy will be mailed to each Lodge, which we trust will be looked over carefully and read at the first regular meeting when received.

We, your Board of Grand Trustees, feel that each member of our Society can not help but be impressed by the work done by our Society. During the year beginning July 1, 1904, and ending June 30, 1905, our Society has paid out in death claims $6,800. While this amount may seem small, we should stop and consider the great amount of good this amount of money has done. We should not measure it as dollars and cents.

A policy calling for $200, another calling for $400, is not a great amount of money, but in time of trouble it is a small fortune.

Our Society is not what it should be, when we stop and consider the membership of the Brotherhood of Locomotive Firemen. We not only ask the wife of a brother to join us; we take in the whole family—wife, daughter, mother, sister and widow of the B. of L. F. All we ask of the brothers is to use their influence to have them join us, and we will do the rest.

Our Society needs a thorough awakening all through its membership, and it is but fair that the members make some little sacrifices for the extension of the Order, in consideration of the exceedingly low cost of protection they enjoy. Our prosperity depends wholly on the increase in membership. Growth is essential in every department of life, and without it failure is sure to follow. It is not asking much of each member to try and bring in, at least one member each year. Look over our reports of membership and see what it would mean to us when we meet in Milwaukee in 1906. I would suggest that all sisters supply themselves with application blanks, and, finding themselves in a city or town where there is a Ladies Society, affiliate, and make themselves at home. And encourage every eligible wife, daughter, mother and sister to join us. If a sister should be located in a city or town where there is no Ladies Society, sow the seed by bringing to the notice of friends and acquaintances whom you may meet; explain the aim and object of our Society, and thus you may lay the foundation for a new Ladies Society, which may prove to be one of the brightest and best in the Order. Let us, sisters, formulate plans for a vigorous campaign for increased membership. Why not begin September 1, 1905, and continue steadily until June 30, 1906? Let these months be full of earnest, active work. Let every member of each Society resolve to get at least one new member, and thus double our membership. Show our Grand Lodge officers they have our hearty co-operation in this matter.

If you believe in the Ladies Society (and I believe you do), talk it; give it your influence; be consistent in your profession as a member and do the little we ask of you for the good and welfare of our organization.

Our Society is solid financially, thoroughly accepted socially, but these advantages will not stay the hand of the grim reaper, Death. Hence the necessity of new members to take the place of those whose work is finished. The responsibility that has rested upon their shoulders must be transferred to others and younger ones. Let each one do her share. Try and get a member to join us.

I can not close this article without adding a word of thankfulness and praise to our Grand Counselor, Bro. Frank P. Sargent, for the many kindnesses and favors shown the Board of Grand Trustees in furnishing transportation and a great many other favors, which would have added greatly to our expenses to the Ladies Society. Also to our Worthy Grand President, Sister Georgia M. Sargent, for the great assistance to the Ladies Society, for her wise counsel and forbearance and goodness of heart; to Sister Ella M. DuBois, our Grand Secretary and Treasurer, for the many favors shown us while in Boone; also to Sisters DuBois and Strong for the grand reception given in our honor at the beautiful home of Agnes G. Strong, our Editress, during our short stay at Boone.

MARY E. GODDING,
Chairman Board Grand Trustees.

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The Grand Secretary and Treasurer.

For the better understanding of the local lodge Treasurer, it is deemed best to make an explanation in regard to members under suspension. Many of the Treasurers making returns to the Grand Lodge office for grand dues or assessments seem to have the idea that for the members of their lodge who have not paid to their Collector it is only necessary to mark "Suspended" after the name on the statement and make no returns for them.

The Grand Lodge office must have either a report of expulsion, withdrawal or death, or returns must be made for all.

A careful compliance will save confusion and delay. The lodges generally are in an excellent condition—better than ever before in the history of the Society—and if we all comply with our laws to the very best of our ability we can accomplish wonders in a few years. I find the local officers generally very willing and ready to comply with all the laws when they rightly understand them, and a letter from this office usually meets with a prompt and cheerful reply. For this I am indeed grateful. In connection with our work for our Society I like the saying, "Hitch your wagon to a star." If we all do this we will find the work looking up, onward, and always upward.

No Society ever stands still. In the common course of events we either improve or the opposite. Let us make our work of such character that our improvement during the new year will be marked. Let the change which must come to our Society be in the right direction.

"Hitch your wagon to a star."

Mary E. DuBois,
Grand Secretary and Treasurer.

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Notice.

The Editress of the Ladies Department has received notice that the copy for this department must be delivered to the Editor and Manager of the Magazine on the morning of the 8th of each month.

Contributors will please bear this in mind and send all matter for publication as early in the month as possible.

Agnes G. Strong, Editress.

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Attention.

Annual reports have been received from 115 lodges at this date—August 2, 1905. The Secretaries who have not yet mailed annual reports to the office of the Grand Secretary and Treasurer will knidly do so at once. It is very necessary for the keeping of good records, and a compliance with this request will be appreciated.

Mary E. DuBois,
Grand Secretary and Treasurer

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A Social Party.

According to a Spokane daily paper, a successful social party was given in one of the lodge rooms in Pacific Hall one evening recently by Spokane Lodge, No. 195, Ladies Society of the Brotherhood of Locomotive Firemen, at which about 200 members of the Order and their friends were present. The evening was spent in amusements, after which refreshments were served and a general social session enjoyed.

The social netted the lodge the sum of $45, which will remain in its treasury until needed.

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Letters from Friends.

From L. S. 199—(*A Member, Puget Sound Sisters, Seattle, Wash.*) I take great pleasure in writing for the first time for our Magazine, just to let the sisters know how our little lodge is progressing.

We were organized April 26th with 26 charter members, by Sister Violet Stover, of Loyal Lodge 166, of Minneapolis, Minn. She was ably assisted by Sister Davidson, of Mt. Tacoma Lodge 196, to both of whom we owe many thanks. Sister Stover, we are pleased to say, is one of us now, as she came in by transfer card since we were organized. We know even better her sterling worth as an earnest and conscientious worker, both in and out of the lodge room. In fact, the members are all hustlers and willing workers. If they had not been we would not have our names enrolled on a charter today. Sisters Georgia Peterson and Pauline Gillulv deserve our sincere thanks for their untiring efforts and many trips over the city, in order to get the names of all the sisters who cared to go in as charter members. In fact, we have all given our time in this effort, and done the best we could, and I trust each one will continue to do so in the future, so we may make a success of our Society. I am sure that each one will do their part, and thus we look forward to a prosperous year. The brothers of Puget Sound, No. 407, can not be too highly praised, for they are ever ready to extend a helping hand to a worthy brother, and one thing sure, if No. 199 does not prosper and meet with success, it is not the fault of the brothers, for they have been a great help to us. They donated $12 to our Society since our organization, and made us a present of $20 for our supplies and charter to start with, so we think of them as being "above reproach" of any kind. And last, but by no means the least of their kindnesses to us, on last Friday evening, after the close of our regular lodge meeting, we were called out into the hall, while the doors of the anteroom were locked for a short time (Oh, no! we were not inquisitive, nor wanting to peep—women never are) ; but we did not have long to wait, for soon the doors to the lodge room were thrown wide open and we were ushered in, and to such a banquet as will be remembered for many a day. There were 48 ladies seated at the first table, and the brothers were in bright, clean overalls and jumpers, and to say they are No. 1 caterers does not express it. They have the sisters of 199 placed in the shade. They served sandwiches, ice cream and cake on shining new scoops, while the coffee and cream were served from peculiar long-spouted cans and tallow pots, which the sisters hardly knew how to handle. It was certainly a jolly bunch, and a time long to be remembered. Several of the brothers then spoke a few words to us, congratulating us on our splendidly organised auxiliary, and wishing us all success.

We have a very efficient set of officers, and each one tries to be present at each meeting, and endeavor to do their work to the best of their ability. The officers are as follows: President, Luella Good; Vice-President, Maggie Williams; Past President, Violet Stover; Collector, Stella Grove; Treasurer, Olive Tegthmire: Secretary, Pauline Gilluly; Warden, Blanche Hendrix; Conductor, Yula Martin; Guards, Ada Hammond and Anna Little.

This is my first attempt to write for the Magazine, and if this article finds space in your columns I will let you hear from us again.

With best wishes for success to the sister lodges, I am, yours in friendship and charity, ONE OF THE 26.

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FROM L. S. 15—(*Mrs. Mary Negus, Cleveland, Ohio.*) Forest Flower Lodge 15 and Forest City Lodge 10 on July 3d held a joint installation. The meeting was largely attended, over 200 being present. A short program was also given, and greatly enjoyed by all present.

The principal feature of the evening was a check from No. 10 for $146.75, the receipts from the May party, conducted and arranged by Bro. F. N. Gear, the efficient Secretary of No. 10.

The ladies appreciated the kindness and interest Bro. Gear has taken in their Society, and as a token of their esteem the ladies presented him with a very handsome military set of brushes, with his initials engraved thereon.

Brother and Sister Gear were very much surprised and pleased, and in a few very well chosen words Bro. Gear thanked the ladies, and said that the Ladies Society could always depend on his assistance.

Then we disposed of a quilt the ladies had made to Bro. Gear.

The principal singer of the evening was Miss Jordan, who has a beautiful soprano voice. Although not a member of the Ladies Society, she has always been very kind in assisting us, and we all appreciate her kindness very much.

Refreshments and cigars were passed and a jolly good time was enjoyed by all. The Brotherhood read their yearly report, and we do not believe there is another lodge belonging to the B. of L. F. that is in a better condition financially then No. 10. They have over $4,000 in their treasury and have paid over $1,000 in sick benefits. So we congratulate them on their prosperity. Forest Flower is progressing very steadily, and we have good attendance at our meetings. Our old officers were re-elected, and our treasury has over $200, so we think we are doing nicely.

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FROM L. S. 177—(*A Member, Middleton, N. Y.*) I have been reading the letters from the sisters in the Magazine, and thought they would like to hear from us, as they have not heard a word from us for a long time.

On May 27th we celebrated our second anniversary by inviting the brothers of 232 to a party and social evening. A delightful luncheon, consisting of ice cream, cake and strawberries, was served, and the brothers proved to us that they know how to do dishes by going into the kitchen and doing them, and leaving everything in a very orderly and tidy manner.

Some of our sisters are very careless about attending the regular meetings of our lodge. Sisters, remember your obligation to your Society. Come out and take an active interest in all the meetings of the Society. Pause and think wnat it means to us and our families in many ways. It takes but little of our time and attention to do all that is required of us. Let us not grow selfish and be forgetful of what we owe others. And let us always speak of others as we would have others speak of us. Then, and only then, will our lodge flourish.

We are going to give our "goat" a good exercising at our next meeting, as we have a candidate to initiate into the mysteries of our Order.

July 12th being the time for installation of officers, the lodge presented our Secretary, Sister Mary Hoey, with a $5 gold piece. The presentation speech was made by the President. To say Sister Hoey was surprised is putting it mildly. All she could utter was a mere "Thank you." Then Sister Suffern, our worthy Vice-President, in a few well chosen and very appropriate remarks, presented the President with a very handsome gold-headed umbrella. Her surprise was even greater than that of the Secretary, if such a thing could be possible.

On July 24th the brothers of Lodge 232 gave a picnic, and with but very few exceptions the sisters were all there, and all had a thoroughly enjoyable time.

We wish our Editress the best of success, and to all the sister lodges we wish good luck and unlimited success; and also to the Brotherhood of Locomotive Firemen, in whose interests we are organized. In friendship and charity.

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FROM L. S. 53—(*Edna Ashley, Trinidad, Col.*) It has been some time since I have noticed an article from Florodora Lodge 53, but I assure you, sisters, we are not asleep, but have been up and doing, as the work for the last few months will show.

We had one candidate for our last meeting, and two more waiting for the degrees at our next meeting. It was our privilege, as well as our pleasure, to hold joint installation ceremonies with the brothers of Las Animas Lodge 344, on July 7th, after which a lunch was served, and all had a very enjoyable time.

We are deeply grieved to state that Brother and Sister C. E. Smith lost their only child July 9th—an infant son of seven months. We extend our most heartfelt sympathy to the father and mother in this their great sorrow, and commend them to the all-wise Father, who doeth all things well.

Resolutions of sympathy have been drafted and sent to the parents and to the Magazine.

We will try and write for the Magazine often and let the sister lodges know how our lodge is growing and prospering. Best wishes for all lodges and for our sister Editress.

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FROM L. S. 86—(*Sister B., Laramie, Wyo.*) Jewel of 86 wishes to tell the sisters, through the columns of the Magazine, that we have begun the fiscal year with great activity. Our membership is increasing rapidly. As many of our brothers have lately taken unto themselves a wife, we have had the opportunity of receiving many new members.

On the evening of July 7th we held joint installation exercises with the brothers of 86, after which a social good time was enjoyed by all present. The meeting was held in the Trainmen's Hall, and their wives and sweethearts were also our guests. Ice cream, cake and coffee were served. We want to thank the committee on arrangements for the good time they provided for us.

We hold "joint meetings" every two months, and by the large number who attend and by the good times enjoyed, it is thought the brothers, as a lodge, still think of us as their precious "Jewel." We certainly appreciate the encouragement we receive from the boys of 86. They seem very proud of our little society, and are ever ready to assist us in every way. As a society we are truly grateful for their favor.

Success to 86 and every lodge of the L. S.

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FROM L. S. 65—(*Mrs. William Snyder, Nevada, Mo.*) I will make an effort to write a letter for our Magazine. Do not think that the members of 65 are all asleep because you do not hear from us oftener. We are still getting new members. They are a little slow, but sure.

On our last meeting day we were agreeably surprised to be called on by a committee from No. 371, and cordially invited to partake of a banquet prepared by the brothers. The boys were on their best behavior, and with pleasant smiles waited on each lady to a queen's taste, and "jollied" us until we all wished they would come again soon.

They had prepared a fine program, consisting principally of music, and had invited their sweethearts and friends to enjoy the same with us.

May success and prosperity be with Covenant Lodge, No. 371, is my earnest wish.

Yours in friendship and charity.

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Death Report.

Maude J. Willis.—Lodge 10; died June 26, 1905; cause, tuberculosis of the throat. Insurance, $200.

Mary E. Long.—Lodge 116; died July 22, 1905; cause, uraemic convulsions. Insurance, $200.

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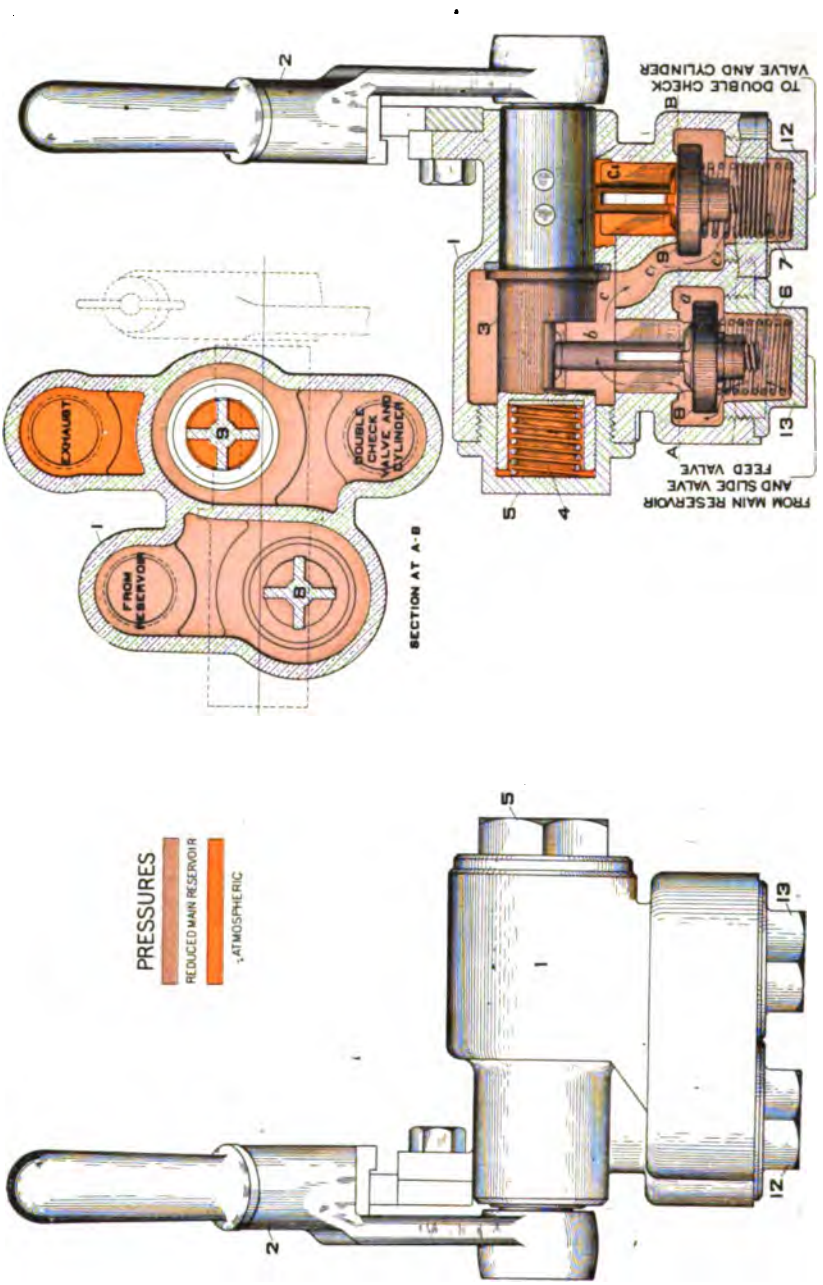
TO DOUBLE CHECK VALVE AND CYLINDER
FROM MAIN RESERVOIR AND SLIDE VALVE FEED VALVE
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DOUBLE CHECK VALVE AND CYLINDER
FROM RESERVOIR
SECTION AT A-B
PRESSURES
REDUCED MAIN RESERVOIR
ATMOSPHERIC

Locomotive Firemen's Magazine Educational Charts

WESTINGHOUSE AIR BRAKE SERIES

PLATE XXIII—STRAIGHT AIR BRAKE VALVE

BROTHERHOOD OF
Locomotive Firemen's Magazine
TECHNICAL DEPARTMENT
JOHN F. McNAMEE
EDITOR AND MANAGER
SUBSCRIPTION PRICE
$1.50 PER YEAR

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Plate XXIII—Straight Air Brake Valve.

Plate XXIII of the Westinghouse Air Brake Series of the Locomotive Firemen's Magazine Educational Charts shows views of the straight air brake valve. It is used with the Combined Automatic and Straight Air Brake.

For switching purposes, for holding the slack of the train on heavy grades, and for stopping at water tanks, coal chutes, etc., this brake valve is particularly valuable, being conveniently located near the side of the cab and within easy reach of the engineer.

The left-hand view in Plate XXIII shows the brake valve as it appears in its usual location in the cab, while the right-hand view shows a vertical section of the valve in application position, and the upper view shows a horizontal cross-section through *A B*, right-hand view.

In the different views *1* is the valve body; *2* the brake valve handle; *3* the valve shaft; *4* the shaft spring, which bears against the shaft *3* and holds the collar encircling the same securely against a leather washer, shown in right-hand view, and making an air-tight joint: *5* is the cap nut securing shaft *3* and spring *4* in position; *6* and *7* are the check valve springs; *8* the check valve controlling main reservoir pressure; *9* the check valve which controls the escape of brake cylinder pressure to the atmosphere, and *12* and *13* are the check valve cap nuts.

The handle *2* is connected to the shaft *3*. Shaft *3* is provided with a collar which bears against a leather washer, and the tension exerted by spring *4* in the hollow end of shaft *3* permits of an air-tight joint being formed. Shaft *3* is cut away on opposite sides, and at two points, in which tappet pieces are riveted (this will be better understood from sectional views which will be shown in a following plate). Each tappet piece is provided with a flange, or projection, which stands directly over and above the steel cap on the end of the stem of its respective check valve *8* or *9*.

The connections to main reservoir pressure and to the double check valve and brake cylinders are indicated in the right-hand view. Main reservoir air is reduced to a limited pressure by means of a reducing valve before it is permitted to enter the straight air brake valve.

In applying the brakes with the straight air brake valve, right-hand view, the handle of the brake valve is moved to the position shown, when the tappet piece on shaft *3* which stands over check valve *8* unseats that valve, permitting the reduced main reservoir pressure to enter the brake valve, pass into chamber *a*, up and around check valve *8*, into chamber *b*, and through passages *c*, c^1 and c^2 to the double check valve and brake cylinders. This pressure passing beneath check valve *9* assists check valve spring *7* to hold it to its seat.

The rapidity or slowness of application of the brakes is dependent on how far the brake valve handle is moved toward its extreme application position. If moved only far enough to cause check valve *8* to move a short distance from its seat the effect will be gradual, whereas, if the brake valve handle is moved to its extreme application position the effect will be quick and the brakes will be applied hard. Likewise in releasing the brakes, if the brake valve handle is moved far enough in the opposite direction to cause check valve *9* to move only slightly from its seat the release will be gradual, but if moved to its extreme release position the release of the brakes will be effected quickly. This feature of the straight air brake valve makes it valuable for the purposes intended, and its use makes good braking more easily accomplished.

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Locomotive Testing Plant of the Pennsylvania Railroad System, Louisiana Purchase Exposition, 1904.

At the meeting of the Advisory Committee, consisting of W. F. M. Goss, H. H. Vaughan, J. E. Sague, E. M. Herr, F. H. Clark, C. H. Quereau, H. V. Wille, and W. A. Smith, which was held at Broad Street Station, Philadelphia, June 12, 1905, the following preamble and resolutions were presented by the Secretary and unanimously adopted:

That, Whereas: The advisory committee, representing various scientific and technical interests in the tests of locomotives at the Louisiana Purchase Exposition, having completed its formal work, and desiring to express its appreciation of the action of the Pennsylvania Railroad System in conceiving, planning and executing these tests, now makes of record the fact, that:

The Pennsylvania Railroad System has brought into existence an entirely new testing plant designed for mounting either freight or passenger locomotives, and capable of absorbing for an indefinite period the maximum power of a modern locomotive when running at any rate of speed between 10 and 75 miles per hour;

It has caused to be designed and constructed a dynamometer capable of registering the tractive power of the heaviest locomotives, and at the same time so sensitive as to indicate the slightest variation in the force it may exert;

It has purchased and standardized instruments and apparatus for use in securing all data which has been deemed to be of scientific interest;

It has organized a complete corps of observers, engineers and computers to carry out the tests, and to record, tabulate and analyze the results;

It has invited and secured the co-operation of scientific and technical men of this and other countries to assist it in placing the tests upon the highest scientific plane possible in such work;

It has overcome difficulties, in many cases perplexing and serious, incident to the carrying out of such a work as a part of a great International Exposition;

It has, as a result of its effort, defined the action of seven different typical locomotives as regards the performance of the boiler, the engine, and of the locomotive as a whole, under many different conditions of operation, making of record a mass of information concerning the economic performance of the modern locomotive of great immediate value, and supplying a basis of comparison which will prove useful for many years to come;

It has met the expenses of equipping and operating the plant with an unstinted hand, always holding considerations of cost subordinate to the definite object of making the tests as complete and valuable as possible, notwithstanding the fact that the amounts involved have been far greater than have ever been appropriated to any similar undertaking; and

It has undertaken a broad plan of publication which is to result in making all its data derived from tests, and all conclusions based thereon, together with a description of methods and means employed, all in great detail, accessible to railroad officials and locomotive designers throughout the world; therefore be it

Resolved, That the advisory committee expresses its appreciation of the part taken by the organized staff concerned in conducting this work;

It recognizes that special credit is due to Mr. J. J. Turner, third vice-president, and Mr. Theo. N. Ely, chief of motive power, for their efforts in securing the interest and the favorable action of the Pennsylvania Railroad System in behalf of the proposed work, for the broad views which have prompted them in giving it their general direction, and for the interest they have shown in the maintenance of the high standards which have marked its progress;

To Mr. F. D. Casanave, for the able manner in which he has effected a working organization, for his successful efforts in securing the locomotives to be tested, for the skill, earnestness and freedom from friction with which he has managed the entire work;

To Mr. A. W. Gibbs, for his enthusiastic personal support, and for the fullness with which he has made available the resources of the motive power department;

To Mr. A. S. Vogt, for a design of testing plant of unusual beauty and perfection of details, and of such excellence in operation that under the severe conditions of service, interruptions were more frequently due to locomotive defects than to difficulties with the plant;

To Mr. E. D. Nelson, for the efficiency with which he organized and managed the expert staff, and for the ability shown in dealing with all scientific questions involved;

To Mr. G. L. Wall and his efficient staff of assistants for the devotion shown in the operation of the plant, their ability and determination in overcoming difficulties, their skill in maintaining running conditions, and their painstaking efforts in securing accuracy in results.

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American Locomotive Company's New Department of Publicity.

Mr. G. M. Basford, for the past eight years editor of the American Engineer and Railroad Journal, has accepted a position with the American Locomotive Company in charge of a newly established department of publicity. He will assume his new duties October 1st, at the general offices of the company, 111 Broadway, New York City.

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Central Railway Club.

At the regular meeting of the Central Railway Club, held at the Bedell House, Grand Island, N. Y., Friday, September 8, 1905, a reception was given to its past presidents, which consisted of the following gentlemen: Mr. E. Chamberlin, chairman of the freight car repair pool, New York Central Lines, who was president during the years 1889-92; Mr. Arthur M. Waitt, consulting engineer, president during the years 1893-94; Mr. S. Higgins, general manager, New York, New Haven and Hartford Railroad, president during the year 1895; Mr. E. D. Bronner, superintendent of motive power, Michigan Central Railroad, president during the year 1896; Mr. John Mackenzie, retired, president during the year 1897; Mr. John S. Lentz, superintendent car department, Lehigh Valley Railroad, president during the year 1898; Mr. E. A. Miller, superintendent of motive power, New York, Chicago and St. Louis Railroad, president during the year 1899; Mr. H. F. Ball, superintendent of motive power, Lake Shore and Michigan Southern Railroad, president during the year 1900; Mr. George W. West, superintendent of motive power, New York, Ontario and Western Railroad, president during the years 1901-03; Mr. James Macbeth, master car builder, New York Central and Hudson River Railroad, president during the year 1904. The present president of the club is Mr. Charles H. Hogan, who is identified with the motive power department of the New York Central System.

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Air Brake Lubrication.

The Joseph Dixon Crucible Co., Jersey City, N. J., has issued a new publication entitled "Air Brake Lubrication," with a description of the properties, uses and special advantages of Dixon's Ticonderoga graphite air brake and triple valve grease, and Dixon's Special graphite, No. 635. The statement is made that Dixon's graphite air-brake and triple-valve grease, prepared according to the suggestions of air-brake experts, has, after long and thorough tests with greases of various compositions and densities, been adopted by one of the leading trunk lines of America. Scientific tests of Dixon's graphite on triple valves has thoroughly demonstrated its value. Useful information and full directions for using are contained within the pages of this little book, which should be in the possession of every person having to do with air brakes.

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American Practice in Locomotive Building.[*]

It is in the provision of locomotives for the railroads of the republic that the most remarkable records of rapid construction have been made in American shops—locomotives having, in some instances, been completed in eight days—and it is for these steam roads of the United States that there have been evolved the largest and most powerful locomotives in the world—engines that will haul a load of 6,000 tons. The manufacture of locomotives is one of the most interesting of all industrial processes. It reaches a spectacular culmination in the erecting shop, where the efficiency not only of every department, but of every employe is put to practical test.

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[*] By William F. Bogart, in the American Inventor.

The erecting shop of the modern locomotive building plant is usually a structure several hundred feet in length with a floor space aggregating several acres. The walls are largely of glass and within the floor are ranged a great number of engine pits of brick masonry. There are numerous devices to facilitate work, as, for instance, an ingenious arrangement for disposing of the smoke and vapor formed in firing up and testing locomotives. Especially notable in the equipment are the huge electric cranes which traverse the building and serve not only to bring quickly to the snop cylinders, boilers, wheels, frames and other parts, but are capable of lifting and carrying the heaviest locomotives clear of other engines in the pits.

The actual assembling of a locomotive in the erecting shop takes place in a surprisingly short space of time. First, a pair of cylinders are brought to the erecting floor by one of the traveling cranes and are suspended over the track upon which the locomotive is to be built. They are deposited upon jacks and with little delay the frames are placed in position. While the workmen are waiting for the boiler to arrive many minor fittings are applied, and when the great cylindrical structure for generating steam is brought in from the boiler shop and lowered into place the mass begins to have the semblance of a locomotive. Next, the entire structure is lifted bodily into the air by a large crane, in order that the wheels, which have been in waiting on the forward end of the track, may be rolled into place, and then follows the installation of the cab, stack and pilot, together with the running board and other minor details. Meanwhile the boiler and all moving parts have been thoroughly tested.

The boiler shop is one of the most important branches of the modern locomotive building institution. Steel plate is used exclusively in modern American locomotives, although in many engines for export the firebox is of copper. The steel is received at the works in sheets of various sizes and thickness, some of them being over twenty feet long, this size being required to form a ring for the very large boilers now in use. The punching and drilling of holes in this sheet steel is done solely by tools driven by separate electric motors, thus doing away with the dangerous overhead belts of bygone days. The riveting is done by massive but practically noiseless machines operated by hydraulic power.

Whereas pressed and cast steel are being used very extensively in locomotive construction there is one part of each engine which is invariably made of cast iron, and that is the cylinders. The largest American locomotive building plant has a foundry that extends the length of a city block. There are three cupolas, each having a capacity of fifty tons of iron at one heat, and the amount actually used in this shop aggregates 135 tons per day. The cast iron used for cylinders is of the hardest grade obtainable. In locomotive work it is necessary to make some castings weighing as much as 9,000 pounds, and in the case of these large pieces the molten metal is poured into the molds from ladles each of which has a carrying capacity of 12,000 pounds of iron.

An American locomotive of moderate size and modern construction costs from $10,000 to $12,000. The American manufacturer has the advantage of being able to purchase material in some instances cheaper than it can be obtained abroad; but on the other hand, labor costs fully 50 per cent. more. For all that, the Yankee locomotive builder can undersell his foreign competitor by a heavy margin. Our builders have sold more than $40,000,000 worth of locomotives abroad, one firm having filled orders from 29 different countries in one year.

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Locating Blows, Testing and Break-downs of Compound Locomotives

In response to a popular demand from many of our members and readers for instruction relative to the operation and maintenance of compound locomotives, abstracts from papers by Mr. W. J. McCarroll, published in Record of Recent Construction No. 40, by the Baldwin Locomotive Works, and by Mr. F. P. Roesch, published in a pamphlet entitled "The Tandem Compound," by the American Locomotive Company, are here reproduced:

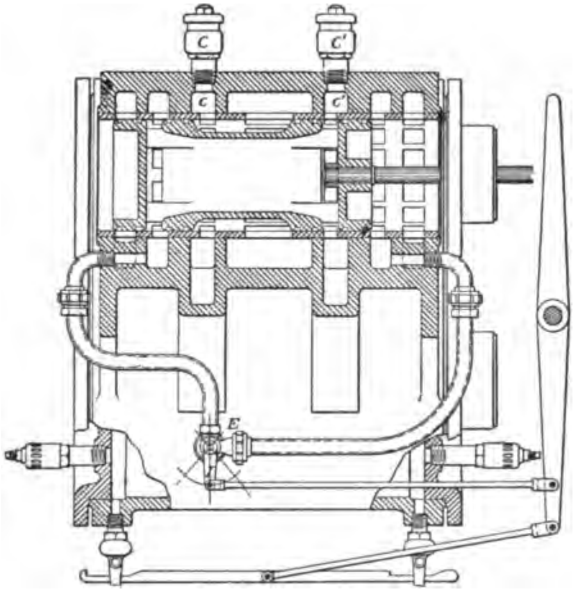

Fig. 3

*Locating Blows on a Vauclain Four-Cylinder Compound Engine.**

At times it is necessary, in order to make an intelligent report, to know how to locate any defect or any derangement of parts in the compound cylinders, such as leaking of steam past the various packing rings of the valves and pistons. It may at first appear puzzling to know just how to locate troubles of this sort, but with a little careful observation any of the usual defects can be located.

On the Vauclain four-cylinder engine, when it is observed that the engine is going lame or exhausts unequally, about the first inspection necessary would be to examine the starting valves and connecting levers. Place the starting valve handle in the cab in central position, then get down and observe the position of the lever on the starting valve. If this is central, that proves these valves to be exactly right. If one side is central and the other side is front or back of central position, the connecting lever rod should be lengthened or shortened, as the case may be, to make it central. Should the lameness still continue, a rigid inspection of the motion-work for defects, such as bent eccentric rods, loose eccentric rods, bent transmission rod, loose rocker boxes, etc., should be looked for.

With this make of engine there need be no alarm about eccentrics slipping, as they are all securely keyed to the axle, and this key can not possibly get out of position without seriously deranging the motion. If the motion-work is in no way deranged, and the lameness continues, it is then necessary to test the valve packing rings and cylinder packing rings.

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*Abstract from paper by W. J. McCarroll, read before the Traveling Engineers' Association, September, 1902.

It will be noticed in Fig. 4 (a sectional cut of cylinders and valves), that the valve packing rings are numbered and referred to in the following manner: The rings governing admission and release of steam to high-pressure cylinder are *1*, *2*, *7* and *8*, and those to low-pressure cylinder are *3*, *4*, *5* and *6*. . . . . Rings *1*, *2*, *7* and *8* can be tested as follows: Place the reverse lever in central position, thereby covering all the ports, then open the throttle and admit steam to the ends of the valves. If rings *1* and *8* leak, the steam will blow through, filling both ends of the high-pressure cylinder and central cavity of the valve. The leak can be noticed by steam escaping in a steady blow at high-pressure cylinder cocks, or by removing indicator plugs (if cylinders are so arranged), or on engines having relief valves on the end of extended valve stems, by steam blowing through this valve. It can also be noticed by blowing through air valves C and C^1, in Fig. 3, on low-pressure cylinder ports, after the reverse lever has been moved from central position sufficiently to get the lap opening on valve to low-pressure cylinder. If these rings do not leak, no steam should escape from these points. If rings *5* and *6* to low-pressure cylinder leak, it can be noticed by a steady blow through the exhaust at the same test made for rings *1* and *8*. If there should be a small leak through rings *1* and *8*, the steam will not be entirely lost, as it goes to do useful work in the low-pressure cylinder.

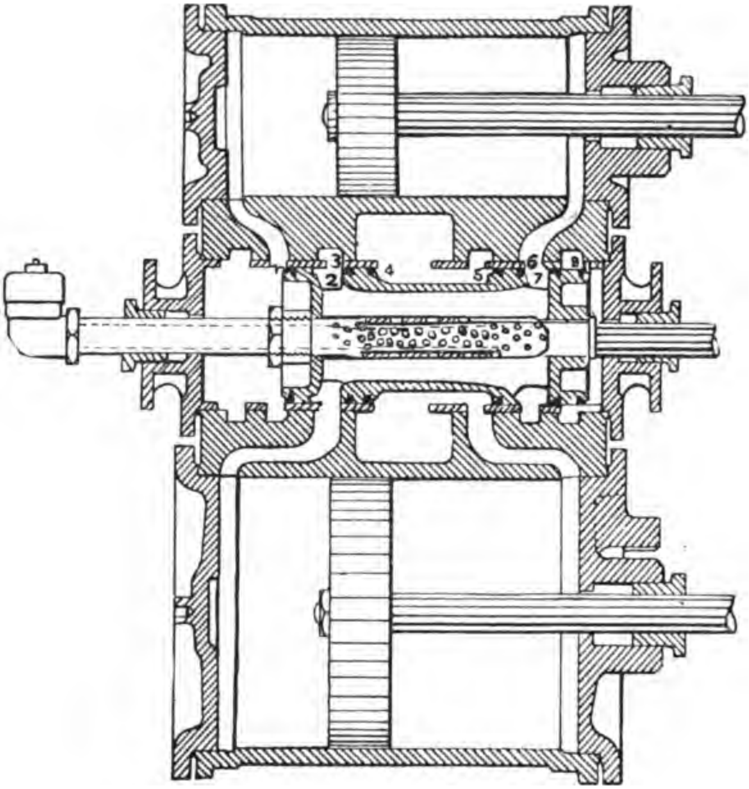

Fig. 4

To test rings *3*, *4*, *5* and *6*, governing the admission and release to low-pressure cylinders, place reverse lever in full gear, with starting valve open and driving brakes on. Open throttle, and if these rings leak it will be indicated by a steady blow through the exhaust nozzle.

To test high-pressure cylinder packing rings, place engine at about quarter stroke, so that valve is open and steam enters high-pressure cylinder at front end,

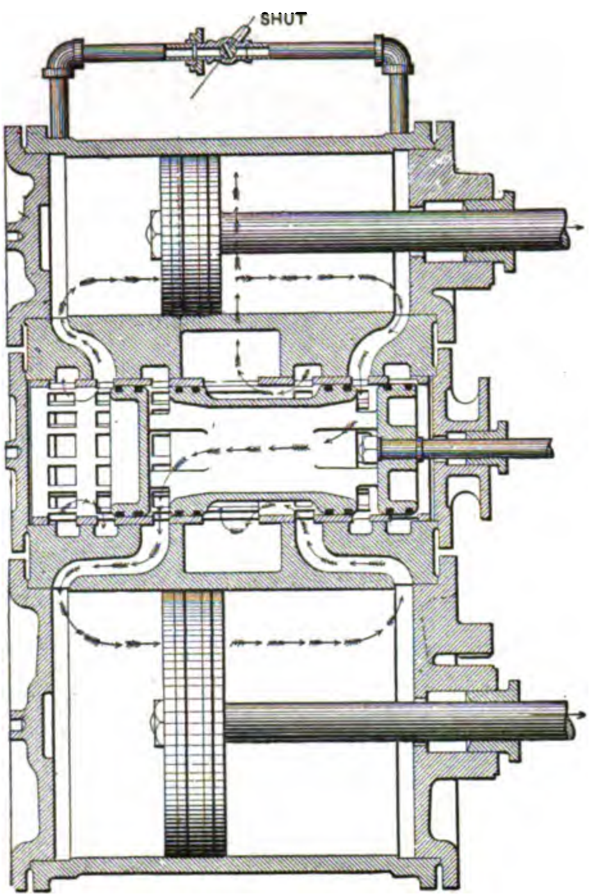

Fig. 5

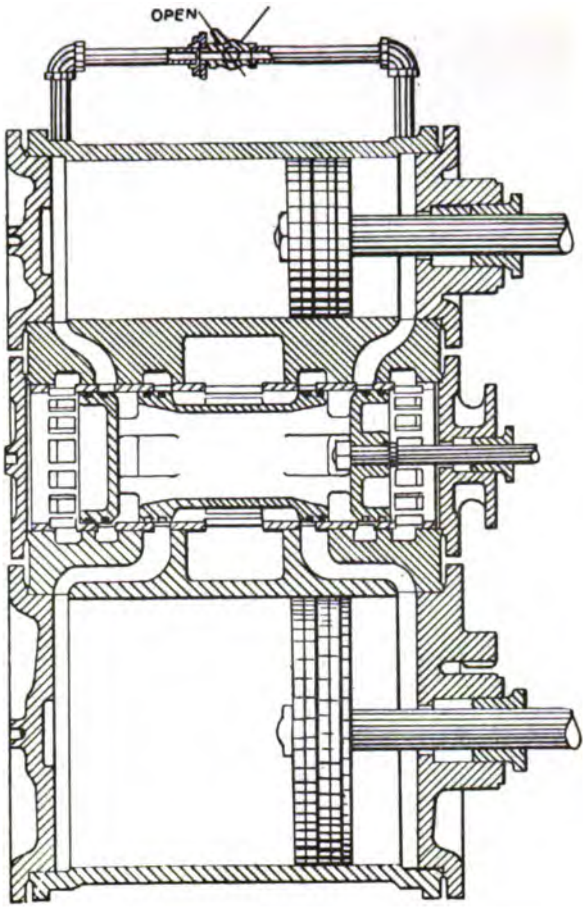

Fig. 6

as shown in Fig. 5. Keep starting valve closed and driving brakes on. Open throttle and admit steam. If the packing rings leak, the steam will pass the ring and down through the center of the valve to the forward end of the low-pressure cylinder, and can be detected by a steady escape of steam at front cylinder cock.

To test low-pressure cylinder rings, keep engine and valve in same position as testing the high-pressure cylinder packing rings, but open starting valve, which gives an increased pressure in low-pressure cylinder. If the packing rings leak, it will be detected bv a steady escape of steam at the back cylinder cock.

The testing of valves and pistons for leaks and blows should always be done when cylinders are hot and well lubricated.

Should the high-pressure cylinder packing leak, it would increase the pressure in the low-pressure cylinder, consequently the exhaust would be heavier on this side and sound as if the valves were out. A leak through the low-pressure cylinder packing will decrease the exhaust pressure and cause the engine to have two light exhausts on this side.

In case it is necessary to disconnect the Vauclain engine, on account of breakdown, proceed exactly as you would with a single-expansion engine. The valve, when placed in central position, will cover all ports the same as is done by the plain D valve.

The central position of the valve is shown in Fig. 6.

Break-downs and Locating Blows on Two-Cylinder Type of Compound Locomotives.[*]

To locate blows or leaks through the valves or cylinder packing on the two-cylinder type of compound locomotives, precisely the same manner of procedure is followed as on a single-expansion engine. These tests should be made when the cylinders are warm, well lubricated, running slowly, and engine working as a single expansion.

In case of break-down, and it is necessary to run in on one side, the engine can be disconnected as readily as a single-expansion engine and in exactly the same manner; the main rod should be taken down, cross-head blocked and valve placed in central position to cover all ports.

In all cases, regardless of which side is disabled, the intercepting valve must be in the position to allow the engine to work as a single-expansion engine.

All the different makes of compound locomotives are so arranged that live steam can be admitted to the low-pressure cylinder, so that the power may be increased for starting trains, and to keep them moving on grades, where a single-expansion engine would stall. This feature on the Vauclain compound is governed by the starting valve and has been previously referred to. On the two-cylinder type of compounds this feature is controlled by the movement of the intercepting valve. One position of this valve allows the live steam to enter the low-pressure cylinder and the engine to work as a single-expansion engine. If the position of the valve is reversed it closes the opening for live steam to the low-pressure cylinder, and opens a passage that allows the exhaust steam from the high-pressure cylinder to enter the receiver and the low-pressure cylinder.

The movement of this intercepting valve is at all times under the control of the engineer by a small lever in the cab, and by the movement of this lever the engine can be made to work single expansion or compound at any part of the stroke.

From the fact that this method of using live steam in the low-pressure cylinders is to be found on all makes of compound locomotives, the engineer has therefore the same duties to perform when operating any class or make of these locomotives; he should be careful not to abuse the engine by carelessness in handling the starting valve, or the intercepting valve, as the economy of fuel and maintenance depends in a large measure on the proper use of these valves.

Testing Tandem Compound.[*]

The figures in this pamphlet show sections through steam chests, valves and cylinders, with valves in various positions for testing.

It will be noticed that high-pressure valve *A* is central or internal admission, while low-pressure valve *B* is external or end admission. Also notice that ports *C* and *D*, leading from high-pressure steam chest *E* to cylinder *F*, are crossed. Both valves *A* and *B*, and cylinder packings and piston-packing sleeve *G*, can be tested on each side of engine by simply moving reverse lever. To make tests, place the engine on quarter on side to be tested and proceed in manner designated. . . . .

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[*] Abstract from paper by W. J. McCarroll, read before the Traveling Engineers' Association, September, 1902.

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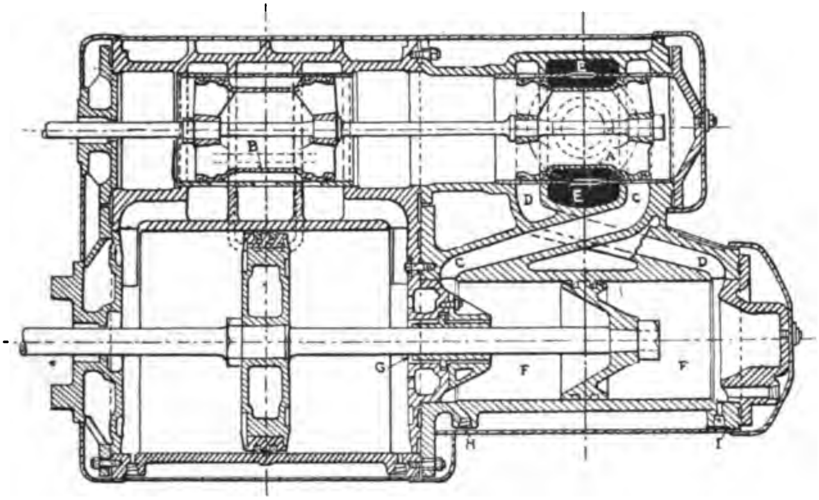

Fig. 1

Testing High-Pressure Valve, Fig. 1.—Engine on top quarter. Reverse lever in center of quadrant. Starting valve *S* closed as in Fig. 7. This places both valves *A* and *B* in central position, covering all ports on side to be tested.

By opening throttle, steam is admitted to the high-pressure steam chest *E*, as shown in red (black here—Editor). If steam now flows from either cylinder cock *H* or *I*, the high-pressure valve *A* is blowing.

Testing Low-Pressure Valve, Fig. 2.—Engine on top quarter. Reverse lever on center, as in Fig. 1. Starting valve *S* open, as in Fig. 6.

Remove by-pass valve *M* in Fig. 6, but replace valve-cap, which is not shown, as it is bolted to under side of starting valve. This allows steam to flow through by-pass from high-pressure steam chest *E*, through

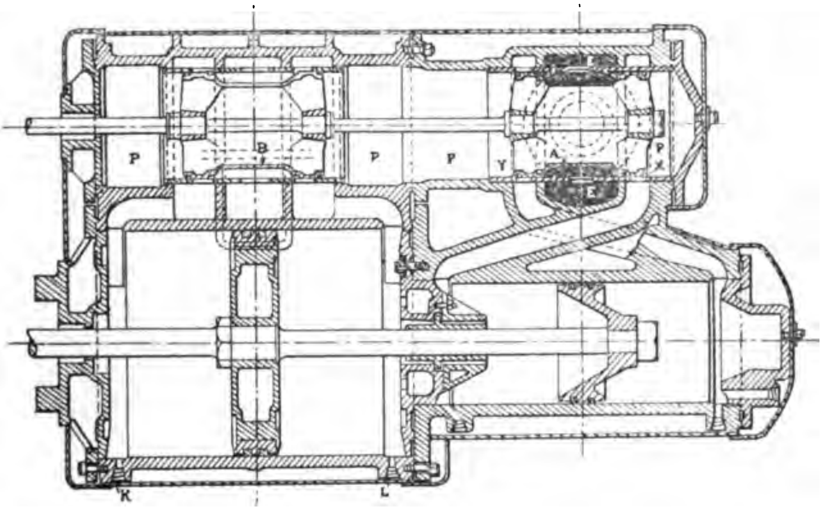

Fig. 2

starting valve ports *N* and *O*, and past exhaust edges *X* and *Y* of high-pressure valve *A*, into low-pressure steam chest *P*.

If steam now blows from both low-pressure cylinder cocks *K* and *L*, the low-pressure valve *B* is leaking.

Testing High-Pressure Cylinder Packing, Fig. 3.—Engine on top quarter. Starting valve *S* closed, as in Fig. 7. Reverse lever in back motion.

This admits steam from high-pressure steam chest *E*, through steam port *D*, to front end of high-pressure cylinder *F*.

If steam now blows from back high-pressure cylinder cock *H*, the high-pressure piston packing is blowing.

Testing Low-Pressure Cylinder Packing, Fig. 4.—Engine on top quarter. Starting valve *S* open, as in Fig. 6. Reverse lever in back motion. This allows steam to flow through starting valve into low-pressure steam chest *P*, thence through front low-pressure steam port *R* to front end of low-pressure cylinder *J*.

If any steam shows at back low-pressure cylinder cock *K*, the low-pressure piston packing is blowing. Always test low-pressure piston packing in this position.

Testing Piston Packing Sleeve, Between Cylinders, Fig. 5.—Engine on top quarter. Starting valve *S* closed, as in

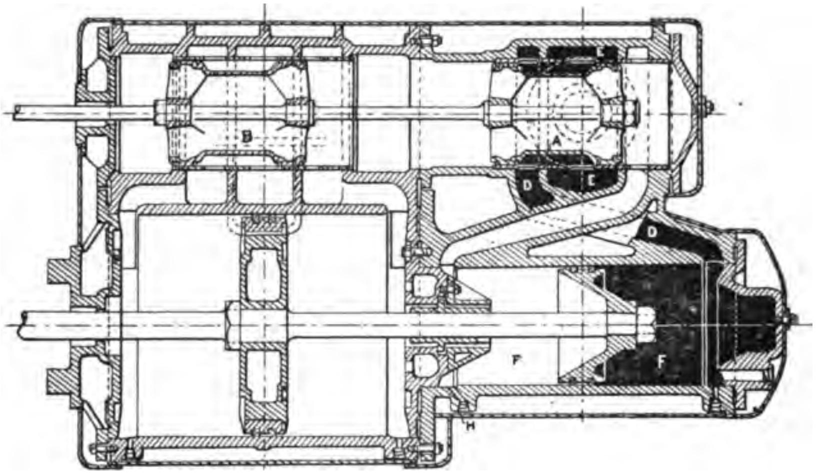

Fig. 3

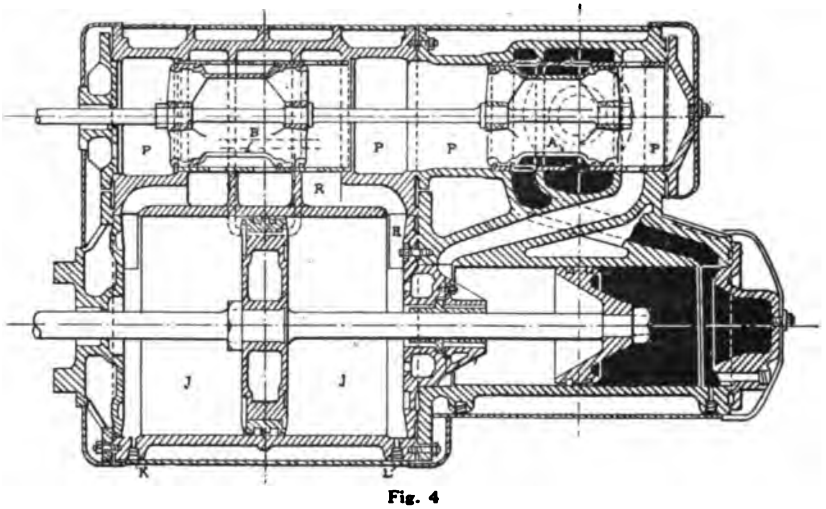

Fig. 4

Fig. 7. Reverse lever in forward motion. This admits steam from high-pressure steam chest *E*, through steam port *C*, to back end of high-pressure cylinder *F* only.

If steam now flows from front low-pressure cylinder cock *L*, the piston sleeve *G* is worn and leaking.

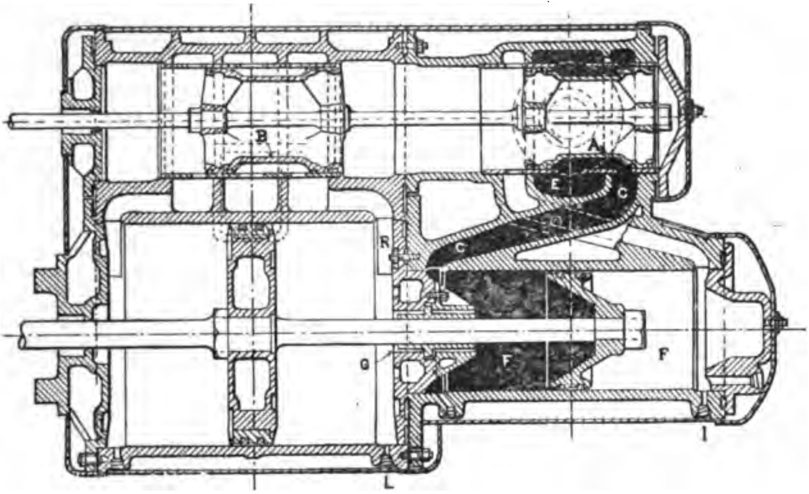

Fig. 5

Starting Valve in Position for Working Simple, Fig. 6.—Fig. 6 shows section through high-pressure valve, steam chest and starting valve. By-pass valve *M* removed, but having valve-cap replaced. For working simple, starting valve lever *T* should be vertical, which places valve *S* in forward position, opening both ports *N* and *O*.

For Fig. 2 test, the starting valve *S* is in position, as shown in Fig. 6, but having high-pressure valve *A* on center, by-pass valve *M* removed. For Fig. 4 test, valves *A* and *S* are in position, as shown in Fig. 6, but having by-pass valve *M* replaced.

Starting Valve in Position for Working Compound, Fig. 7.—Fig. 7, same section as Fig. 6. Both by-pass valves in place. Lever *T* in back position, so starting valve *S* covers port *O*.

For Fig. 1 test, starting valve *S* as in Fig. 7. The high-pressure valve *A* on center.

For Fig. 3 test, valves *A* and *S* in position as shown in Fig. 7.

For Fig. 5 test, starting valve *S* as in Fig. 7. High-pressure valve *A* in forward motion.

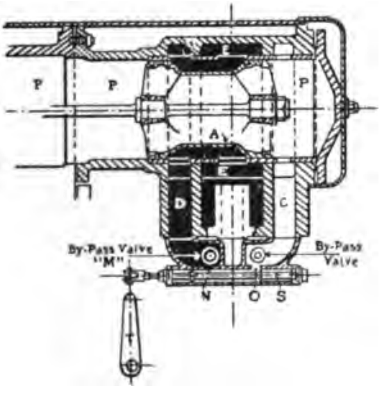

Fig. 6

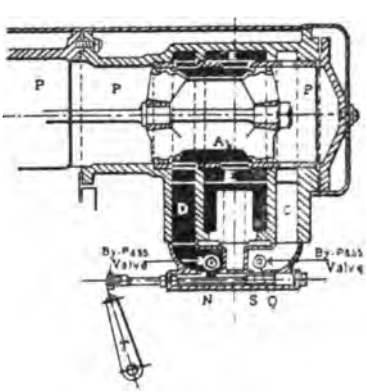

Fig. 7

Express Service and High-Speed Trains.

"Ever since the Pennsylvania and the New York Central Railroads inaugurated their fast service between New York and Chicago," says Railway World, "a heated discussion has been carried on in the newspapers as to the safety of traveling under these new conditions. The accident to the 'Lake Shore Flyer,' soon after it was put in service, aroused general apprehension that these high-speed trains could not be operated with average safety. In some official quarters the disposition has been shown to yield to this criticism, at least so far as to admit the possibility of an eventual modification of the schedule to conform to what might appear to be a general demand for slower speed.

"The criticism of the policy of these two companies in reducing the time of their special trains is based upon a misapprehension of the new factors which make these high speeds possible. The time of these trains is only in a small measure due to their increased speed. The main reason for the reduction in time is the long runs and the success of the efforts which have been made to keep the tracks clear. The average speed of the Pennsylvania Special from Chicago to New York is about fifty miles per hour, including stops, and slightly more than this taking out the small amount of time necessary to change engines. This speed is not excessive, and in fact is exceeded on many roads without giving rise to the slightest adverse comment. The speed of the express trains between Washington and New York, and between Philadelphia and Atlantic City, frequently reaches seventy miles per hour, and sixty-six-mile schedules are common. Similar fast time is made on many other roads. In fact, the running speed of the Pennsylvania Railroad's eighteen-hour train is but a little greater than that of the twenty-four-hour train operated by the same company between New York and Chicago. For example, between New York and North Philadelphia, the time of the Pennsylvania Special is one hour and forty-two minutes, and of the Chicago Special two hours and two minutes; between Harrisburg and Altoona the time is two hours and thirty-six minutes for the Pennsylvania Special, and three hours and ten minutes for the slower train; between Altoona and Pittsburg the Pennsylvania Special saves a half hour over the time of the Chicago Special; between New York and Pittsburg the running time of the eighteen-hour special is but two hours and fifteen minutes less than that of the twenty-four-hour train, and of this time more than thirty minutes is explained by the longer stops of the Chicago Special. West of Pittsburg the eighteen-hour train saves four hours over the time of the Chicago Special, but this is again explained by the more frequent stops of the slower trains. After leaving Pittsburg the first stop of the Pennsylvania Special is at Crestline, a run of 188 miles. The Chicago Special, however, makes four stops between Pittsburg and Crestline, and four stops between Crestline and Chicago, as compared with two for the Pennsylvania Special. Eastbound, the time of the Pennsylvania Special from Harrisburg to New York is but fifteen minutes less than that of the twenty-four-hour train.

"Excessive speed maintained for long distances along lines crowded with traffic is undoubtedly a factor of danger, when met with, but this is not the condition present in the fast service recently inaugurated between Chicago and New York. The phenomenal time of these trains is due rather to the absence of interference than to the speed of the engines and the excellence of the roadbeds. As the operating efficiency continues to increase, and in response to the growing demand of the traveling public, an average speed of fifty miles an hour for one thousand miles, it is not unreasonable to expect, will in a few years become a matter of course."

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Steam and Electric Motive Power in Railway Freight Service.

At a recent meeting of the Iowa Street and Interurban Railway Association interesting papers by Mr. F. McDonald, assistant to the president of the Waterloo, Cedar Falls and Northern Railway Company, and by Mr. H. H. Polk, president and general manager of the Interurban Railway Company of Des Moines, were read. In these papers comparison of the two motive powers as applied to a light traffic railway was made. Among other things Mr. McDonald said:

In looking over the proposed interurban lines for Iowa, I find that nearly all the promoters are depending on the freight business from the country districts to furnish a large part of the revenue. We handle freight in carloads on all parts of our line, and have portions which are operated exclusively by electricity, other parts operated entirely by steam locomotives, and some on which both steam and electric motive power are used.

So far as I know we were the first to attempt to build such a line; at least, we were unable at that time to find another road operating under the same conditions. Our president, Mr. Cass, and myself made several trips to different points where electric railways were said to be doing a freight and passenger business, only to find that their freight business consisted of a package or express business. In only one instance did we find a road handling freight in carloads in standard steam railway cars on joint through tariffs with trunk line railways.

In locating a line of this kind it is necessary that a territory be selected in which the competition will not be direct with steam railways already established, the idea being to work in connection with the steam roads as a feeder and not against them, for the farming community alone will never support a railway unless there is a reasonable chance to secure the freight and passenger business in and out of their market towns.

The question of motive power is one of the hardest to decide for a road of this class, and while I realize that this is a convention of electric railway men, I wish to say to any gentleman here who is contemplating the building of a railway through a farming district, consider well your location, prospective volume of business and the frequency of the train service which you wish to give before installing expensive electrical machinery and overhead equipment to operate a line of this kind. On the line out of Waterloo we have 16 miles equipped with electricity, from Waterloo to Denver Junction. We use for this line 20,000 volts alternating current stepped down through transformers and the rotary converters to 550 volts direct current.

For the first six months we operated to Denver Junction by steam, both freight and passenger trains. Then, having completed the installing of electric machinery and overhead work, we operated it entirely by electricity. This we continued to do for about eight months, using in the freight service an electric locomotive of 120 horse-power. This locomotive would handle five carloads over our heaviest grades, but we found, in operating a freight line, as many of you have found in the passenger business, that we could not take part and let the rest wait until we went back after it. It all must go about the same time. Our business is mainly a through business and depends on connections with the trunk lines at junction points. For example, stock, butter and other time freight must connect with the time freight trains on the connecting lines, and shippers object to loading any earlier in the day than just to make the run. As a rule, also, there are one or two days in the week when all stock men wish to ship in order to reach the market on certain days. We soon found that, in order to take care of the business it would be necessary to put into service a much larger locomotive, which meant increasing the capacity of our power station and overhead lines, the added investment to be used only one or at most two days in the week. We studied the matter carefully, making the comparison of operating electric and steam locomotives, both for labor and fuel, and returned to the use of the steam locomotive for the freight business, except for switching at points where the use of a steam locomotive was not practical. . . .

The amount of coal burned on our steam locomotives averages about 1.4 tons per 10,000 ton miles, while for electrical service it is between eight tons and nine tons per 10,000 ton miles. It is true that this is hardly a fair comparison, as the coal used in locomotives is Illinois lump, while that used at the power house is the cheapest Iowa steam, and also for the reason that the steam locomotives have longer runs without stopping, thereby giving them the advantage of the momentum, while the electric cars are operated largely on city lines, where they have to start and stop every few hundred feet.

About two years ago we acquired control of 28 miles of steam railway track between Denver Junction and Sumner. We have never equipped this line for electricity, but have operated it entirely by steam, running two passenger and one freight train each way per day. The passenger trains are operated the same as the electrical service, stopping to receive and discharge passengers at all highway crossings. We do not find it any more difficult to do this with a light train, consisting of one combination baggage and smoker and one straight day coach, equipped with air brakes, than with an electrical train of the same size. This number of trains takes care of all the regular passenger business without difficulty, and for special occasions we run excursion trains of whatever size is necessary to care for the business. The freight trains make the round trip from Sumner to Waterloo each day, a distance of 45 miles, or 90 miles for the round trip, with one engine and crew.

For passenger business on the rural railway, I have found the advantage of electric motive power over steam is largely a matter of convenience to the public, there being no question but that it is pleasanter to ride in an electric train with no smoke and no odor. On the other hand, the steam train has the advantage of each train having its own motive power. On the electric line, if anything happens to your power house or overhead lines, every train on that section of the road is at a standstill until the damage is repaired, and if it is line trouble and far out, considerable time is lost in reaching the location of trouble, especially if you have no steam locomotive or other independent means of reaching the scene of trouble. In snow, I think, with locomotives of the same weight and with the power behind them, the electric will do as good work as the steam, but when it comes to lightning and sleet, the steam locomotives have a decided advantage, and on one of these cross-country lines, over Iowa prairies, the bad sleet storms are as much to be dreaded, on an electric line, as the snowstorms. If any one here has discovered a successful way to fight sleet on an interurban trolley wire, I should like to know it.

Our morning train out of Waterloo must make connection at Denver Junction with the Chicago Great Western train for Fort Dodge, Omaha and all points West to the coast. In winter, when we were troubled with the snow, we could count on the other road being delayed by the storm to about the same extent we were, but during the early part of March we had a few sleet storms, which, while not as bad as I have seen, were sufficient to delay our electric train for an hour or more, while the steam train never knew there was a storm, so far as its running time was concerned. No sooner does the weather become warm enough to do away with the trouble of snow and sleet than the trouble of lightning begins. We are protected by tank arresters, pole arresters and car arresters, but still we lose more or less armatures, to say nothing of the loss of controllers, light circuits, etc. We have, fortunately, never lost any generators at our power station.

For switching purposes it is often possible to use an electric locomotive in places where it would be impossible to use steam For example, on our line at Cedar Falls we switch all the coal for the Iowa State Normal School from the steam railways, a distance of about a mile. We do this over our regular city line on the streets of Cedar Falls.

The paper by Mr. H. H. Polk in part was as follows:

It is only within the last three or four years that electric railway men have waked up to the fact that there might be some money made at the freight business. Even today the majority of them will not consider the idea at all. They are contented with the passenger business alone. The one great reason for this is the fact that electric railways, when first built, were nothing more nor less than street railways extended into the country. Within the last few years, however, the modern electric railway is being built on steam railway standards. This means low grades, minimum curvature, heavy rails and bridges and private right of way. The private right of way enables the electric railway to run its cars at any rate of speed it desires, to haul any kind of freight, and eliminates the great majority of accidents caused by collisions with teams and vehicles.

It seems to me that steam railways, with few exceptions, are very short-sighted in refusing to recognize electric railways in the interchange of freight. They can not by this policy stop the building of electric railways. The latter are here to stay and each year sees more of them in operation. The steam railways that publish joint rates with electric railways and are willing to grant a division of the rate will get all of the foreign shipments which originate on the line of the electric road, and there are many instances where the electric railway taps a new territory, one to which the steam railroad has heretofore never had access. The electric railway should have a traffic arrangement with some connecting steam railway in order to do a successful carload business, for if they do not have this the rate from a point on their line to a point on the steam railway would be the sum of the two locals, and therefore prohibitive. A. B. Stickney, president of the Chicago Great Western Railway Company, says that he does not care how freight is brought to his road, whether in a wheelbarrow, stage-coach, horse car or by an electric car, he will take it and be willing to pay a little something to get it. This is the broad-minded view of this question. It is generally conceded that the electric road is more popular with the farmer. It is more profitable to him to ship over the electric railway than over the steam railway, as the electric railway gives him more rapid, frequent and fully as reliable service, enabling him to receive and ship freight, mail and express at almost any hour of the day. The farm takes on a new aspect and becomes capable of being used in many ways otherwise impossible, part of the benefit of which will, of course, accrue to the railroad.

It should be the policy of electric roads to put in side-tracks, stock yards and loading chutes wherever it is shown that they will be used. Stock can then be loaded on the farm without driving them 7 miles, 8 miles or 10 miles to some steam railroad station. The shipper saves the resulting shrinkage and has his choice of the steam railroads in the large terminal cities, enabling him to obtain the lowest rate and the shortest route. After deciding upon what road he desires to ship, he has merely to notify the electric railway and he will be supplied with a car from that road. He can also ship in tile, coal, machinery, feed, etc., and have these cars set upon his siding, eliminating the long haul from the railroad station. Much the same thing is true of the small cities and towns through which these interurban lines run. The merchant can easily order by telephone from the wholesale houses and within an hour or two the goods so ordered are in his store. He is not required to have so great an investment in his stock and is able to cut down his insurance, so that he, too, is glad to make use of the electric freight service. It is my opinion that the electric railways should adopt a rate which is possibly 5 per cent. lower than the Iowa classification. The rapidity and frequency of the service does a great deal toward getting business for the electric road, but if we can say to a shipper that our rates are less than the Iowa classification, it is just that much more attractive to him.

The greatest difficulty we experienced in developing our freight department was in convincing the public that we could handle any kind of freight, from a small package to a carload of live stock, grain, lumber or any other commodity. However, this did not take very long, and today they know that we can handle anything a steam railroad can.

In order to do a successful freight business it is necessary to "get out" after the business or some one else will get it. Solicit your business, not only from the farms through which your road runs, but also from as far away as it is possible to draw it. The amount of business obtained by a good solicitor five miles or six miles away will astonish you. Do not be content to work up business in the country alone. Do so in your cities and towns. See that your freight solicitor makes regular calls upon the merchants of the smaller towns, the dairy concerns, wholesale houses, etc., in the cities. Find a market for the products of the farm, such as dairy products, poultry, fruit, vegetables, etc. Encourage all of these lines and the freight business will rapidly grow.

Building of the Bay Shore Cut-Off.[*]

During the past three years vast sums of money have been expended by both the Santa Fe and Southern Pacific Railway Systems in the way of various improvements in and around San Francisco, California.

The principal work done by the Santa Fe was the filling up of the famous China Basin. This proved a stupendous task, requiring several years to complete, and costing over $2,000,000. A space in the bay covering 56 acres, and ranging in depth from 25 to 75 feet, was filled with stone and earth. To secure this immense quantity of filling it was necessary to dig down a small mountain in the district, known as the "Potrero," in South San Francisco.

BAY SHORE CUT-OFF

One of the long, deep fills being made (looking north), distant stretch of the bay

Another very extensive and expensive piece of improvement made by the Santa Fe was the extension of its transcontinental route from Point Richmond to Oakland, Cal., also the building of a handsome stone depot at the latter place. This has been accomplished within the past two years.

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[*] Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

. . . .

Nor has the Southern Pacific Company been lacking in activity. Like the Santa Fe, this company has been forging ahead along the line of improvements, regardless of the expenditure of great sums of money. One immense task was that of the filling in of Mission Bay, thus adding a large area to its depot and trackage grounds in south San Francisco. This filling material was also taken from the hill from which the Santa Fe drew the masses that leveled up China Basin. In this way a tremendous deep and wide cut was made through the heart of a projecting spur, the foot of which reached clear down to the bay. Millions of cubic yards were taken from this gigantic cut.

For a long time the Southern Pacific has contemplated the practical abandonment of the present line of road between Baden Station and San Francisco, a distance of 15 miles. This route, now so long used, runs near the Pacific Ocean—along the western shore line of the San Francisco peninsula. It also traverses for several miles the populous part of southwestern San Francisco. For that, and other reasons—the question of grade being a potent one—the company deemed a new route expedient. This new route is known as the "Baden Route" or "Bay Shore Cut-Off."

BAY SHORE CUT-OFF

One of the giant steam shovels working on a great side cut

It was proposed to construct a new line farther to the eastward; to leave the main line at or near Baden Station, and to extend the road along very near the western shore line of the great southern arm of San Francisco Bay.

Constructing a road along that route would afford several advantages over the present line. First, it would save some distance—perhaps a mile or more; it would give a much easier grade, be more direct, and lastly, it would obviate the necessity of passing through a thickly settled part of the city.

For years this important change was held in general contemplation, but not until recently has the project assumed definite form. At length the company determined to begin the work, and surveyors were sent into the field.

From the first, it was very apparent that the proposed new route presented many and great engineering difficulties—even for so short a stretch of road. The new route requires the building of about 14 miles. Several long tunnels would have to be bored, much trestling and filling across arms of the bay necessary, and one stupendous cut made—long and deep. All these engineering obstacles represented the outlay of great sums, to be overcome. However, the order was given to proceed, and active operations followed close in the wake of the surveyor's stakes. Work was commenced some months ago and is being crowded forward with all speed. Work has been in progress at each end, and at intervals between these points. The principal delay will be the cutting of the tunnels, as only a limited force can there be employed effectively.

The temporary trestling across the several projecting arms of the bay has already been completed, but the work of filling will require much time and enormous quantities of earth and stone. These of course, the tunnels, side cuts and other cuts will supply. Fortunately, the fills are conveniently "sandwiched" between cuts and tunnels; even with these advantages the work of filling will require much time.

With all possible activity, it is estimated that this short stretch of road will require at least two years to complete. Some idea may thus be formed of the nature and cost of the work.

Between Baden and the first tunnel (coming northeastward) some heavy grading is required, though no very deep cuts. More than 1,000 feet of deep filling follows across an arm of the bay. Then comes the first tunnel, on each end of which work is now in operation.

BAY SHORE CUT-OFF

Glimpse at the enormous cut (referred to in article) where work was commenced, western end

This will be over 1,100 feet long. It will be cut through soft and shattered stone, but the work progresses slowly owing to timbering, etc.

It may be stated here that this new road will be double-tracked all through, including the tunnels. The tunnels will be 30 feet wide at the base (tracks) and 28 feet at the top of the arches. Brick, lined with cement will be used for the sides and arches. Northeastward of the first tunnel is a short water fill, a heavy side cut, and beyond that a much longer fill (some 3,000 feet) when the road crosses a wide tide flat. Following this will be an enormous open cut through a projecting spur. Here are several giant steam shovels tearing out many tons of stone and earth every minute. There are also several locomotives and scores of large dump cars kept busily at work.

Railroad engineers declare that when this vast cut is completed it will be the largest in the United States, if not in the world. It will be 1,320 feet long, several hundred feet wide at the top and 40 feet at the tracks. At the highest point the cut will be 140 feet deep. Over 1,000,000 cubic yards will have to be removed in order to complete this giant cut; but it is situated between two immense water fills, which will greatly facilitate the work of dumping.

BAY SHORE CUT-OFF

View of the 5,700-foot trestle and deep fill, from western end

Still northward of this great cut stretches 5,700 feet of high trestling across another water arm, to fill which will require time and an immense amount of labor. Beyond this comes the second tunnel, 3,600 feet long. Considerable progress has already been made on this tunnel. Another tunnel 2,640 feet long, and still a shorter one will be necessary before the required grade can be reached near the head of Islais Creek, by which route the new road will enter south San Francisco proper.

A long tide-flat fill will be necessary before the new road will reach the colossal cut in the Potrero district already made to complete the great fills at China

Basin and Mission Bay, to which reference has already been made. From there the road will extend across the Mission Bay fill to the present depot.

Among railroad engineers, the construction of the Bay Shore Cut-Off is regarded as the heaviest and most expensive piece of railroad building (for its length) ever undertaken in the history of the whole Pacific Coast.

. . . .

Not for many years—if ever—has such railroad improvements been made at or near San Francisco as are represented by the "Baden Route," or "Bay Shore Cut-Off," as the new road is called. Two years time will be required to complete even so short a road, and the cost of this work will run away up into the millions. As to whether the Southern Pacific will entirely abandon the present line between San Francisco and Baden, on the completion of the Bay Shore Cut-Off, is not known.

The broad area gained to this company by reason of the leveling up of Mission Bay is being rapidly utilized. A large brick roundhouse has just been built and a perfect net work of tracks laid. Large freight buildings are soon to be constructed where once vessels rode at anchor. Owing to the great increase of business, and the augmenting of rolling stock, the pressure for more room has become imperative with both the Southern Pacific and the Santa Fe. Mission Bay and China Basin now furnish space that may prove adequate for some years.

There is now unprecedented activity in and around San Francisco in the way of repairs and improvements. Among other minor work, the Southern Pacific has

BAY SHORE CUT-OFF

Western entrance of the 3,600-foot tunnel, where work was started had the gigantic train transfer boat "Solano" (the largest boat of its kind in the world) out on the ways for months undergoing thorough repairs. The giant craft has been practically rebuilt at a total cost approximating $150,000.

* * *

Book Review.

Electrician's Handy Book.—This is the title of a new book by Prof. T. O'Conor Sloane, A. M., M. E., Ph. D., just published by The Norman W. Henley Publishing Company, 132 Nassau street, New York City, who say: "The publishers consider themselves fortunate in having secured the services of such a well and favorably known writer as Prof. Sloane, who has with the greatest care completed a master work in concise form on this all-important subject."

It is written in a clear and comprehensive manner, deals with the most modern practice, and covers the subject thoroughly, beginning with the A B C of the subject, gradually taking the reader to the more advanced branches of the science, and teaching just what should be known about electricity. It can be easily understood by the student, the practical worker, and the everyday working electrician, and a perusal and study of it will be of benefit as well to the advanced electrical engineer. It is a standard work on the subject and is a thoroughly practical reference book for the practical man. The book contains 41 chapters and several hundred specially made engravings, an illustration being used wherever the text can be simplified by so doing. There are special chapters on the following subjects:

Mathematics, Electric Quantity and Current, The Electric Circuit, Ohm's Law, Electro-Chemistry, Primary Batteries, Storage Batteries.

The Field of Force, Magnets, Induction, Direct-Current Generators and Motors, Direct-Current Armature Winding, The Direct-Current Generator, Armature Reactions.

Characteristic Curves, The Direct-Current Motor, Open-Coil Generators, Generators and Motor Construction, The Alternating Current, Alternating Current Generators, Alternating Current Motors.

Transformers, Management of Motors and Dynamos, Care of Dynamos and Motors, Station Notes, Switchboards, Voltmeters and Ammeters, Distribution.

Lightning Arresters, The Incandescent Lamp, The Arc Lamp, Photometry, Electric Railroads, Electrical Measuring Instruments.

Electrical Engineering Measurements, Electroplating, Electric Meters, Telephony, Bell Wiring, Electric Heating, Wireless Telegraphy.

The book is handsomely bound in red leather, with title and edges in gold, pocketbook style, contains 768 pages, and sells for $3.50.

* * *

Improved Flue Plug.

The illustrations herewith are of an improved flue plug which has been invented and patented by Bro. P. J. Malloy, of Lodge 522, Shreveport, La., who says of his invention that, although simple and inexpensive, it has done away with engine failures and delays on the road caused by leaky flues, besides saving labor in the shop. It is claimed for this invention that no matter how bad a flue may be leaking, when plugged with this device it is impossible for the water to spray out over the fire. It is easily inserted and is made for any size and style of flue. Bro. Malloy describes his invention as follows:

In the drawings, Fig. 1 is an end elevation of my improved plug. Fig. 2 is a side view thereof in a flue-sheet. Fig. 3 is a view of the opposite end of the plug from that shown in Fig. 1, and Fig. 4 is a sectional view of the plug in place in a flue.

The flue *A* is applied to the sheet *B* with a flanged end or bead *a* upon the outer side of the flue-sheet. The plug has the tapered body portion *C* fit in the flue and which may be driven firmly into place, the face-plate *D* to fit against the flue and provided in its inner face with a groove *E*, receiving the bead *a*, and having at its lower side an outlet or nozzle *e*, opening alongside the flue-sheet *B* at the bottom of the plug, and at its outer end the plug has a socket *F* to receive the end of an extension-rod or plugging bar by which the plug may be inserted in the end of a leaky flue through the furnace-door. The body of the plug is tapered or bell-shaped, so it can be forced firmly into position and will fit different sized flues within a reasonable range. It will also be noticed that the outlet or nozzle at *e* from the annular groove *E* discharges close to the flue-sheet instead of spraying over the fire.

In practice the tapered body of the plug is driven tightly into the end of the flue, the flange or face-plate *D* coming firmly

Fig 1

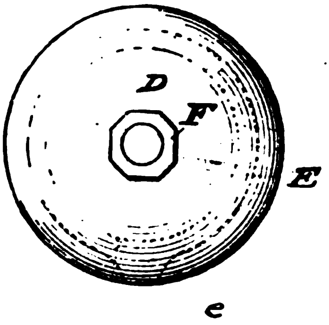


Fig 2

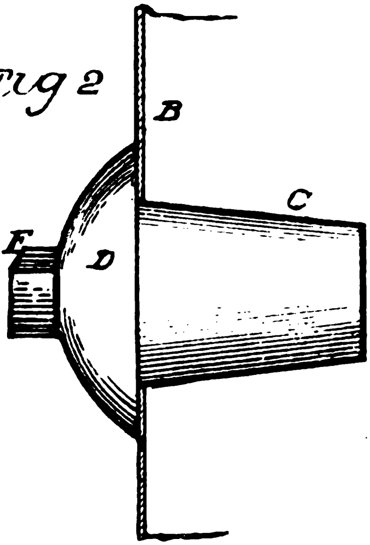


Fig 3

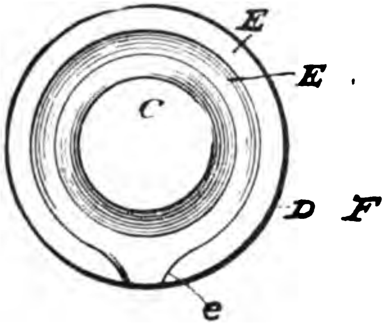
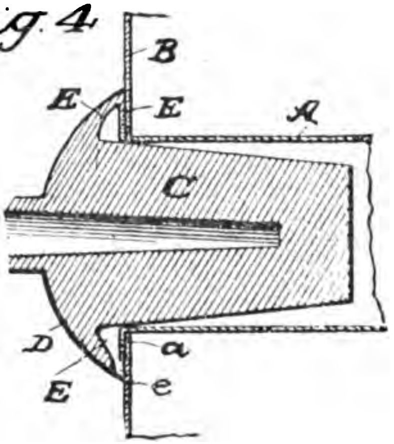


Fig 4



Improved Flue Plug

into contact with the flue-sheet over the bead and forming a joint against the flue-sheet, the plug being so placed that the outlet or nozzle *e* is at the bottom, so that any leakage not stopped by the action of the tapered plug will pass into the groove *E* and be discharged against the flue-sheet.

The plug when applied to one flue will not interfere with any of the other flues can be easily inserted with a flue-bar, presents but little metal outside of the flue-sheet to get hot and burn off or to cause much expansion of the flue-sheet, and can be used in any kind of boilers without damage to the boiler.

As best shown in Fig. 4, the groove *E* is undercut, forming an inwardly-projecting flange *E'*, which overhangs the groove *E* and forms a gutter or trough leading to the outlet *e*, as will be understood from the drawings.

Electric Tablet System on New Zealand Railways.[*]

35. *Master Tablets for Siding Tablet Locks.*

Master tablets will be issued to signal inspectors or fitters, as required to enable them to clean and examine the interlocking apparatus and tablet locks at by-sidings, and the following instructions must be carefully observed:

The names of persons authorized to be in possession of these master tablets will be issued in notices from time to time, and station masters and officers in charge must exercise close supervision and see that no other persons are allowed possession of them so far as it comes to their knowledge. The persons above mentioned must not allow these master tablets to pass out of their possession on any account, unless by a written order from the signal engineer, and they will each be held personally responsible for their safe custody.

In all cases where it is practicable the machines and points at by-sidings which are interlocked should be examined when the sidings are being shunted by goods trains. In no case must the inspector or fitter open the points at by-sidings, unless accompanied by some authorized person, so that two men will always be in attendance when the points are being worked for testing machine. Any violation of this instruction will be severely dealt with.

When it is required to examine a machine at any by-siding between two tablet stations, and when such can not be done while the siding is being shunted by a train, the inspector or fitter, before proceeding from the tablet station at either end, must inform the station master or officer in charge at that station of his intention to examine the frames and use his master tablet, for which information the inspector or fitter must receive a written acknowledgment in his report book. The officer in charge, on receiving this information must immediately inform the officer in charge at the other end of the section; and before a train is allowed to depart from either end the engineer must be informed of the circumstances on the form (Miscellaneous 31) shown below.

When the examination is completed the inspector or fitter, on arrival at either end, must inform the officer in charge, and the officer in charge must then inform the station at the other end of the section.

During the repairing or cleaning of the frames at any by-siding the facing-point bolt must not be withdrawn, nor the facing points altered to lie for the siding and left in that position unless the fitter or his assistant is in charge of the levers. Special care must be taken at places where, owing to the nature of the country, approaching trains can not be seen at any considerable distance. The facing points of any by-siding must not be moved within half an hour of the time when any express, mail or passenger train is due.

INTERLOCKING FITTER WORKING AT BY-SIDINGS (MISCELLANEOUS 31).

....................,
............., Station.
To the Engineer of No. ...... Train:

The interlocking fitter is on the section examining the machines at .... sidings, for which purpose he may use the facing points; you must therefore approach such sidings with care, and have your train under such control so as to be able to stop short of the facing points at such sidings should any hand signals be given for that purpose.

(Signed) ....,
Officer in Charge.
(Date) ....
.... (Time.)
No. ....

Received ticket, numbered as above, stating that the interlocking fitter is examining the machines at ...., which place must be approached cautiously. ...., Engineer.
(Date) ....
.... Train.

36. *Tablets Lost or Damaged.*

If, in the event of a tablet being lost and pilot guard working being established, the table is again found, it must be locked up in the safe or cupboard till pilot guard working has been canceled.

When the tablet can not be found after diligent search, and is regarded as absolutely lost, a certificate to this effect must be given to the traffic superintendent or district traffic manager by the traffic inspector and the representative of the electrical engineer. On receipt of this certificate a circular will be issued giving full particulars of the missing tablet and canceling it. A copy of such circular must be affixed to the tablet instruments for the section. When this has been done the electrical engineer will authorize the tablet instruments to be put into working order, and tablet working will again be brought into operation, but the missing tablet, if it should afterwards be found, must on no account be replaced.

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[*] Continued from September, 1905, Magazine.

When from any cause the tablets are broken in pieces while out of the instruments, the parts must not be replaced in the instruments, but pilot guard working must be established until such time as arrangements are made for the broken tablet to be replaced or repaired and the instruments put into working order. The pieces of the damaged tablet, tied together, may be used for one journey only, to establish pilot guard working, if time can thereby be saved. When tablets are only slightly damaged and there is no doubt that they can be safely placed in the instruments again and taken out when required, they may be replaced, but in doing so great judgment must be exercised. When a tablet has been damaged so that it can not be repaired on the spot and replaced in the instrument, the electrical fitter, must so inform the officer in charge, and, at the same time, the damaged tablet form must be filled out. The officer in charge, or the pilot guard, if the latter has been appointed, will then allow the fitter to place the electric apparatus in place, after which the officer in charge or the pilot guard, as the case may be, will countersign the form, and pilot guard working, if instituted, may then be disestablished according to instructions in Regulation 38.

Before a damaged tablet is taken possession of by the fitter he must give the officer in charge a receipt for it, stating the number and section, and, after it has been repaired or renewed and placed in the proper instrument in the presence of the officer in charge, the fitter must collect the receipt form given to the officer in charge.

DAMAGED TABLET FORM (MISCELLANEOUS 32).

.............., 19..

To the Officer in Charge ....

Electric tablet No. ......, for the section ...., and ...., can not be placed in the instrument, owing to damage, and it is necessary for the apparatus to be unlocked and put in phase.

..............., Fitter.

The instrument has been put in phase in my presence.

.............., Officer in Charge.
.............., Pilot Guard.

(This form to be sent to the electrical engineer by the officer in charge.)

37. *Custody of Train Tablets When Out of Use.*

(*a*) When stations are temporarily closed as tablet stations the tablets must be removed from the instrument by the electrical engineer's inspector and handed to the traffic inspector present, who must secure them in a lock-up bag and personally hand them to the traffic superintendent or district traffic manager.

(*b*) In the event of the opening of a new tablet station being necessary, or of a section being altered in such a way that other engraved tablets are required, after the necessary instructions have been issued by the traffic superintendent or district traffic manager bringing such new or altered sections into operation, the electrical engineer's inspector, or his assistant, will be responsible for placing the tablets in the instruments in the presence of the traffic inspector, and both officers must sign a certificate to that effect and send same to the traffic superintendent or district traffic manager.

38. *Method of Establishing Pilot Guard Working.*

In the event of the electric tablet communication being destroyed, pilot guard working must at once be arranged for by the officer in charge in accordance with the following instructions:

A competent person must be appointed to act as pilot guard, and he must wear a distinctive badge, which, until the regular badge can be obtained, must be a red flag tied around his left arm above the elbow. The regulation badge is a red armlet with "Pilot guard" in white letters upon it.

SPECIAL FORM TO BE USED FOR PILOT GUARD WORKING DURING OBSTRUCTION OR SUSPENSION OF THE TABLET (MISCELLANEOUS 33).

................, Station.
................, 19..

To ....

The[a] .... all traffic will pass between .... and .... in charge of ...., who will act as pilot guard, and no engine or train is to be allowed to leave .... or .... unless he is present and gives permission.

This order is to remain in force until withdrawn by the pilot guard presenting my written authority.

(Signed) ....
Noted by [b] .... at ....
Noted by [b] .... at ....
Noted by [b] ...., Pilot Guard.

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[a] Here insert "Line being blocked at ....," or "The tablet for the section .... and .... having been ....," or "Instruments being out of order."

[b] These signatures must be made on the copy held by the pilot guard.

The above form must be filled up and used when a line is obstructed, or during a suspension of the tablet in consequence of its having been damaged or mislaid, or when the instruments are out of order. Six of these forms must be kept in a convenient place at each tablet station, so as to be available at any moment.

Before pilot guard working is commenced, the pilot guard's copy of this form must be signed by the officer in charge at each tablet station (for exceptions see Regulations 27*a*, 31, and 36), and the pilot guard must see that each of the men signing the form retains a copy for himself. If an intermediate place (not a station) is used for transferring the traffic from one side of the obstruction to the other, the form must be addressed and given to the person in charge of the obstructed point. In the event of a stationmaster himself acting as pilot guard, he must address and give the form to the person he leaves in charge of the station.

Officers in charge, where pilot guard working is in force, will be held responsible that all concerned at their stations are immediately made acquainted with the circumstances and are instructed in the necessary duties.

Signatures must not be obtained by telegraph; there must be personal delivery of the forms by the pilot guard.

In order to secure uniformity as to how officers in charge must act when establishing pilot guard working, the following will serve as an example (the officer in charge is to be understood to mean the stationmaster, if available; if not, the person he leaves in charge of the station. Should such officer not hold a certificate, he must consult the signalman as to the regulations on the subject):

Let A and B represent two tablet stations, between which a failure has taken place. If the first train expected to run is from B it will be the duty of the officer in charge at A to initiate pilot guard working by filling up and signing three forms. These he will hand to the pilot guard, who, after signing all three forms, will hand one form to the man in charge of the signals at A. The signalman at A must sign his own form and the one held by the pilot guard. The pilot guard will then proceed to B by the most expeditious way possible, but must not, unless there is a tablet out of the instrument and in his possession, or unless one can be withdrawn from the instrument at his end of the section, use an engine or any railway vehicle other than a plate-layer's trolley, and hand one form to B (which B must sign), and also obtain B's signature to his own form. The signatures on the three forms will be: Two on the form held by A, his own and the pilot guard's, two on the form held by B, his own and the pilot guard's and three on the form held by the pilot guard, A's, B's, and his own. When the above arrangements are complete and the pilot guard is satisfied that they are understood, trains or engines may then be allowed to go on to the single line under his control and permission.

He will, when practicable, accompany every train or engine, but when it is necessary to start two or more trains or engines from one end of the section under his control before a train has to be started from the other end he must furnish the engineer in charge of each train not accompanied by himself with one of the printed pilot guard's tickets (Miscellaneous 29), where such tickets are in use (see pilot guard's ticket, page 30), properly filled and signed, must personally start such trains and himself accompany the last train. The tickets granted in these cases will apply only to the single journey to the other end of the section, where they must be immediately given up to the officer in charge, who must at once cancel them by writing the word "canceled" across the face of the ticket, and after ordinary working has been resumed they must be forwarded to the traffic superintendent or district traffic manager with a report giving full particulars. After issuing a ticket or starting a train which he does not accompany the pilot guard must not permit another train to enter the section until he has received intimation by telegraph or telephone message from the other end of the section that the previous train has arrived with the ticket, where provided.

If no telegraphic communication exists. a second train or engine must not be allowed to follow until after the expiration of not less than five minutes, nor even then until the full running time of the section has elapsed, should such running time exceed five minutes. The engineer and guard, if unaccompanied by the pilot guard, must be specially cautioned by the latter before being allowed to start.

When the train or engine, unaccompanied by the pilot guard, arrives complete inside the "home signal' of the post in advance, the signalman there will immediately send a telegraphic message to the pilot guard advising him of its arrival. Before starting any train the pilot guard must ascertain from the signalman that all is right, and he may then verbally instruct the engineer to proceed, riding upon the engine when accompanying the train.

The pilot guard working does not affect the fixed signals, which are to be worked in the usual manner. Signalmen must not on any account take off these signals or allow a train to pass into any section that is being worked by a pilot guard, except under the pilot guard's instructions, and when he is present.

In the event of a train accompanied by a pilot guard becoming disabled, the guard must take the necessary steps for the protection of his train, and communicate with the pilot guard as soon as possible. When a portion of a train is left upon a section of the line worked by pilot guard, from inability of the engine to take the whole forward, and the pilot guard is not accompanying the train, the engineer must not return for the rear portion unless he holds the written instructions from the guard authorizing him to do so, and the guard must continue to protect his train in the rear and prevent a following train from pushing it ahead. If the pilot guard be with the train and accompanies the engine with the first portion, the engineer may return without written instructions from the guard, and the guard must protect his train in the front, as shown in clause *b* of Regulation 28.

While pilot guard working is in force no train or engine is to be allowed on the single line outside the "home signal" for any purposes, except the pilot guard be present and personally starts such train or engine; and in all cases the signalman must stop any train or engine, and not allow it to proceed until he has made himself perfectly satisfied that the pilot guard is accompanying it or has given permission for it to start; in the case of an engine unaccompanied by the pilot guard returning for the rear portion of a train, the signalman must stop it and not allow it to proceed until he has seen that the engineer is in possession of written instructions from the guard in charge of the train authorizing him to do so.

If an electric tablet instrument fails, and it is found necessary to work the section by pilot guard, any by-siding in such section must be worked only by trains accompanied by the pilot guard, and in such cases the signal adjuster must also accompany the train and open the locks at the siding with the "master key" by direction of the pilot guard. After the shunting has been completed the signal adjuster will be held personally responsible for the points being properly locked for the main line.

Should it become necessary at any time for the pilot guard to be relieved, it must be clearly understood that this can only be arranged for by the officer in charge who arranged the pilot working. On the first pilot guard's form being collected by the officer in charge he will make out three new forms in the name of the second pilot guard and accompany him on his first journey, collecting the old forms and seeing that the new forms are properly signed, and that all concerned know that the change has been made. After one pilot guard has been relieved by another, the pilot guard who has been relieved must not ride upon any engine until he resumes duty as pilot guard.

Should an officer in charge be relieved during the time pilot guard working is in operation, the man coming on duty must be made acquainted by the man going off duty as to the arrangements in force and with the person acting as pilot guard. The man coming on duty must, before taking charge, countersign the form held by the pilot guard.

When the tablet apparatus is again repaired and ready for use, pilot working must not be canceled until the electrical fitter has counted the tablets in the instruments at each end of the section, and has entered the total number in the respective train register books, stating that the proper numbers are in the instruments. This information is to be written under the last train entry in train registry books and signed by the electrical fitter.

After the instruments have again been put in working order, no tablet must be taken from the instrument at A or B until pilot guard arrangements have been canceled, as follows: When the officer in charge, who established pilot guard working, has been informed by the officer representing the electrical department that the instruments are again in working order, he will write out two forms, as follows:

PILOT GUARD WORKING CANCELLATION FORM (MISCELLANEOUS 34).

.... Station.
.... 19..

To ....

Pilot guard arrangements made by me at .... on .... for the section .... and .... are hereby canceled, and ordinary working will now be resumed.

(Signed) ....

These two cancellation forms must be handed to the pilot guard when at A, who will hand one of them to the person in charge of the signals at A and collect the pilot guard form, and on arriving at B he will also give the person in charge the second cancellation order and collect the pilot guard form. When the above has been done, B will ask A for a tablet, and the train will proceed with the pilot guard and tablet, and on the pilot guard arriving at A with a tablet, the ordinary working will be resumed.

The cancellation and pilot guard forms, together with reports on the subject, must be waybilled to the traffic superintendent or district traffic manager.

In establishing pilot guard working it must be understood that, should the instruments be put into working order before the arrival of the pilot guard at B the pilot guard arrangements must still be completed, and only canceled in the ordinary way. When once the pilot guard has left A, that station must consider that pilot guard working is in force. Should the person who arranges pilot guard working also act as pilot guard, and the instruments be put into working order while at B, it will be permissible for him to cancel pilot guard arrangements before leaving B, so that on arrival at A a tablet can be got to open the section from A to B.

It must be clearly understood that no tablet is to be taken out of the instrument at either end of the section until pilot guard working has been canceled at both ends, and the first tablet taken out, after the instruments have been repaired, must be taken from the end where the pilot guard is, as he must go with the first train carrying the tablet.

In the case of failure of the tablet instruments and pilot guard working having been established, the instruments are only to be tested by the inspecting officer or electrical fitter when the pilot guard is present.

PILOT GUARD'S TICKET (MISCELLANEOUS 29).

Ticket No

Train No

............Line or Branch.

TO THE GUARD AND ENGINEER:

You are authorized to proceed from .... to ...., pilot guard following.

(Date).......... 19..

.... Pilot Guard.

(Back of ticket.)

This ticket must be given up by the engineer, immediately on arrival, to the person in charge of the station to which he is authorized to proceed; the ticket to be afterwards canceled and dealt with as the latter may be instructed by the traffic superintendent or district traffic manager.

Rules for the Guidance of Electrical Engineer's Staff When Attending Train Tablet Instruments.

(*a*) When examining or cleaning instruments which are in use the inspecting officer must on no account leave the instruments open or the tablets out, even for a moment, but must leave all in order, although he may be absent only for a few minutes and may have to open the instruments again to complete his work; and before starting a new section or reopening an old one the inspecting officer must see that the proper number of tablets are in the instruments.

(*b*) The inspecting officer will always give the "Testing" signal before manipulating the instruments, and he is on no account to issue or return, or permit the officer in charge to issue or return, a tablet for working purposes until the "Testing" signal has been given and acknowledged. No officer of the electrical engineer's staff is to issue or return a tablet for traffic working.

(*c*) If a tablet be brought in on the arrival of a train by the officer in charge and the instrument is not ready to receive it, the inspecting officer will not take possession of the tablet, but will put the instrument into order to receive it from the officer in charge as quickly as possible.

(*d*) In case tablets are sent to or from the workshops or the respective stations, they must invariably be securely packed, so as to be completely covered, and booked as parcels of value. When personally conveying tablets for the purpose of balancing, the inspecting officer must on no account allow them to go out of his sight.

CONCLUSION.

In conclusion I would state that there has been at times since the introduction of this tablet system a little trouble experienced by engineers in giving and taking the tablet at stations which are passed at high speed, and the railway department has been experimenting with automatic tablet exchangers. The experiments have been conducted on the Canterbury Plain and in other parts of the colony where trains usually pass stations very rapidly. Three different designs have been tried and all have proved successful. So far, however, no particular design has been selected for adoption, although it seems probable that one soon will be. It will be an innovation which will be hailed with delight by all engineers, because, under the present system—the tablet being snatched by hand—arms and fingers not only suffer sometimes, but there is always the chance of missing the exchange. Another railway innovation, known as the "Pile National Electric Headlight Company," has been fitted to a few locomotives on the Dunedin-Oamara section in the South Island. It is an arc light of over 2,000 candlepower, and its power can best be judged by the fact that on a straight line the light illuminates a mile of track. A little dynamo which supplies the electricity is situated in the space between the lamp and the funnel and is worked by a small steam turbine.

* * *

Air Hose.[*]

To the President and Members of the Air Brake Association:

The following notes on air hose were prepared at the request of our President that a short paper on a live subject be submitted for topical discussion. This is about as live a subject as can very well be discussed by the association.

That the failure of an air hose can cause damage, delay and general annoyance, we all know. That such failure is sometimes the cause of rear-end collisions, we also know. That the cost of maintenance is large, we all know in a vague sort of way, but few have actually investigated that part carefully. All of this is well within the province of this association, and we should appoint a committee to thoroughly investigate the whole subject and report, recommending a means of testing hose to guard against their bursting in transit, as well as the best methods of reducing the cost of maintenance. It is believed that such action on our part would be fully appreciated by our employers.

The following figures will be of interest to those who have not carefully investigated the cost of maintenance of an air hose. During one year the cost of maintaining hose on approximately 25,000 cars, on a certain railroad, was, in round numbers, $30,000.00. It is not claimed that this cost is a fair estimate of the average cost, for it is known to be high. Analysis of the figures whereby this total cost was obtained produces interesting information and shows up some of the leaks. For example, 27,600 hose were purchased and fitted up. But, during the same period, only 19,750 coupling gaskets were purchased. Manifestly, then, not only were a large number of new hose sent out with old gaskets, but the supply of gaskets to the repairmen must have been very limited. Tracing the effect still further, it would encourage trainmen and repairmen to wedge up the couplings, which in turn would produce a large number of torn-off hose and angle cocks. This actually was the result and was one of the prime causes of the investigation. Therefore, by saving a gasket that costs four cents, list price, a hose costing approximately seventy-five cents was destroyed.

To carry this analysis further, over 6,500 new couplings were purchased, or, out of the total number of hose fitted up, about 25 per cent. of the couplings were either so distorted as to render them useless or were entirely lost. Over 12,000 hose nipples were ordered, thus showing that when a hose was torn off only the larger end was returned for refitting. Of hose clamps over 37,000 were purchased, which indicated that the men remounting new hose almost invariably threw away the old clamp.

An interesting development of this investigation was the lack of knowledge regarding the storage of hose. In a large majority of the cases observed, the stock of new hose was stored in the upper part of the storehouse. Nearly all were under the impression that rubber should be kept in a dry atmosphere. A campaign of education along this line alone would produce an improvement.

Now, just a few figures to make this cost more forcible. Five per cent. bonds are considered a good investment. The sum mentioned in the case cited is equivalent to the interest on $600,000 at five per cent. At a lower rate of interest the principal would go to startling figures.

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Wreck on the New York Central.

The Detroit and Chicago Special on the New York Central Railroad met with a disastrous wreck in the yards at East

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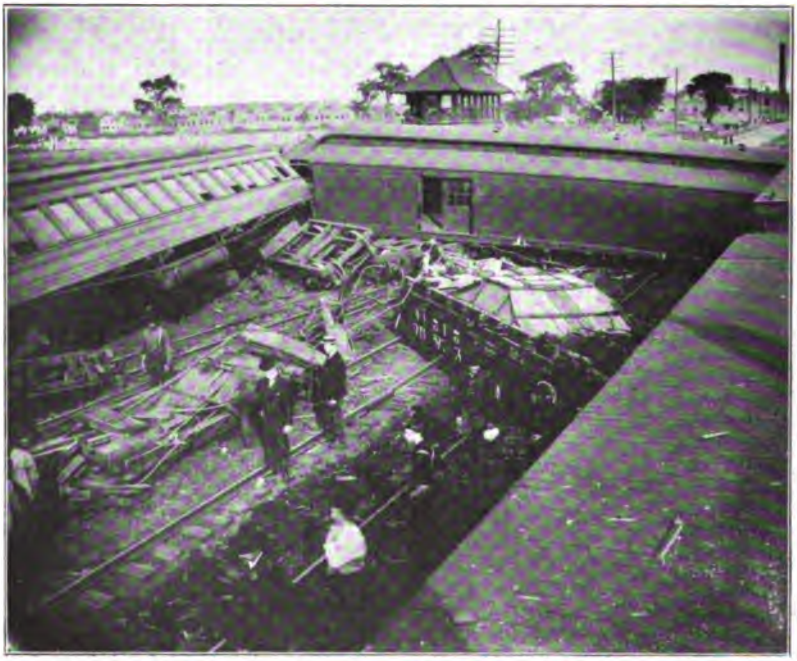
[*] Paper by Robert Burgess, presented at the Twelfth Annual Convention of the Air-Brake Association, April 11, 1905.

Rochester, N. Y., on the morning of July 18, 1905, by running into a train of empty coal cars which were being moved across the main tracks by another engine, resulting in the death of Engineer J. A. Clark and the serious injury of Fireman M. Closey, both of the passenger train. No passengers were seriously injured, which is considered remarkable owing to the seriousness of the wreck.

From statements made by passengers and others, and through testimony brought out at the inquest into the death of the engineer, it is believed that the engineer ran past no less than five signals, three of them red danger signals which were set against him. A difference of opinion exists as to whether or not his train was running ahead of time, several witnesses maintaining that it was from five to nine minutes ahead of time. A special to the Utica (N. Y.) Saturday Globe, dated Rochester, July 21st, among other things says:

Train 23, the passenger, consisted of 13 cars, the wrecked baggage and express car, the smoker, containing about 20 passengers; a day coach, seven sleepers, a tourist car, a buffet and a private car occupied by General Superintendent E. R. Hutchinson, of the Michigan Central Railroad, and his chief clerk, Joseph Williams, of Detroit. That the train was ahead of time is practically certain. The train was due in Rochester at 4 o'clock and the exact time of the wreck is fixed at 3:51. All signals were set against incoming trains as far out as Brighton. The fast special tore through Brighton at 65 miles an hour. William Smith, the towerman at Brighton, had set the signal against the express train. When it rushed past Smith fairly shook with astonishment. His hands trembled as they instinctively dropped on the keys. He ticked the following message to tower 25, near the scene of the accident: "Look out for this fellow. Nine minutes ahead of time. Block set against him. There's something doing before he gets to you." Why Clark disregarded the signals is not known. The block is generally clear for the special, but that was no reason why he should not have been on the watchout. A porter on the passenger train said that the engineer put

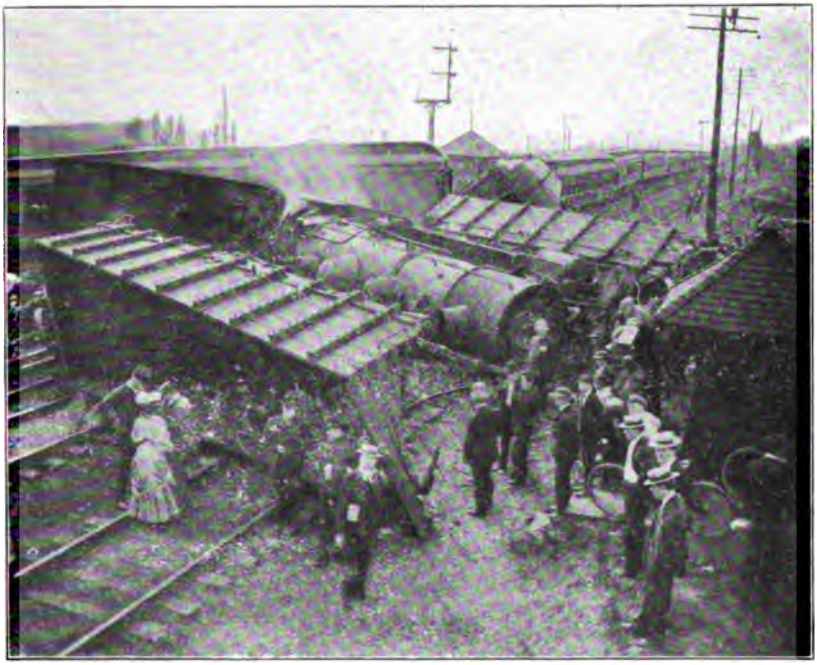


WRECK ON NEW YORK CENTRAL RAILROAD AT EAST ROCHESTER, N. Y.
JULY 18, 1905

on the emergency brakes as he passed through Brighton. He instantly released them and then put them on again, doing this three times in succession. This caused the porter to think something was wrong. The tracks east of the scene of the collision were heavily sanded—showing that an effort had been made to avert the accident.

The switches at the point where the wreck occurred form what is known as a diamond in railroad terms. Switch engine 359 was backing a string of empty coal cars from track No. 4 to track No. 1, when the thunder of the special was heard in the distance and its headlight in a second appeared around the curve. The train of empties was diagonally across the four tracks. As the giant locomotive flashed its headlight down the tracks the switching crew made frantic efforts to avert the impending catastrophe by waving their lanterns and making other demonstrations. The train rushed on, however, striking an empty coal car in the middle. The impact was terrific. The big locomotive plowed through five coal cars, snapping and crashing wood, twisting and breaking iron, which it threw high in the air. A brake beam lodged in the telegraph wires about 40 feet above the tracks. The cab was torn off and steam pipes were bursted. The big engine toppled over, slewed at right angles to the rails and fell, pinning the engineer and fireman beneath the wreckage.

Passengers aroused by the crash were soon scrambling through the shattered windows, assisted by the crew of the yard engine which rushed to the rescue after the collision. The conductors and porters of the several sleepers hastened to ascertain the condition of their passengers. None was seriously hurt. . . . .



WRECK ON NEW YORK CENTRAL RAILROAD AT EAST ROCHESTER, N. Y., JULY 18, 1905

The cause for the engineer of the passenger train disregarding the danger signals which were set against him will probably never be explained, as he succumbed to his injuries without making any statement. He is said to have been a very careful engineer and of good habits. The Rochester Democrat and Chronicle, in reverting to the accident gives a synopsis of the testimony offered at the inquest, and among other things says:

Trainmaster Andrews suggested to Coroner Kleindienst after the inquest had been adjourned that it would have been very easy for Engineer Clark to go to sleep. It is evident that something must have been the matter with him, when he passed so many adverse signals. Two doctors testified that they had noticed no wounds on Clark's head, though one of them said he had made no examination to discover any. Trainmaster Andrews said Clark was a very careful engineer and did not drink.

George Harrison, a yard brakeman, is considered an important witness. Harrison said his attention was attracted to the approach of train 23 by a blast of the whistle of the engine of the freight. He saw Clark and threw his lantern at the cab window to attract his attention. He didn't see Clark's face and couldn't tell whether he was asleep or awake. He says, however, that Clark shut off steam before he struck the freight. There is no testimony to show that the air brakes were applied before the collision. The conductor and trainmen of the wrecked express say they noticed no slackening of speed before the crash. Trainmaster Andrews said he could not tell from the wreckage whether the brakes had been set. The only one who expressed that opinion is G. L. Moody, and he bases his opinion on a double shock received on the platform of the smoking car.

. . . .

There are several mysteries in the case. The most puzzling is how Engineer Clark came to run by so many signals set at stop. Another is how Fireman Clossey failed to notice the passing of the adverse semaphores. It is strange, also, that if the brakes were not set, the Pullmans escaped being telescoped and if the brakes, high-pressure emergency brakes that they were, had been set, how it is that none of the employes on the train noticed their application.

WRECK ON NEW YORK CENTRAL RAILROAD AT EAST ROCHESTER, N. Y., JULY 18, 1905

Nearly as peculiar are the discrepancies in the testimony in regard to the time. The time element seems to be immaterial, however, in determining the cause of the accident, but if Engineer Clark was several minutes ahead of time it perhaps may be due to the same cause which led him to disregard the danger signals. Conductor Bradley, Trainman O'Brien, and Mr. Moody are among those who assert that the accident occurred about 4 o'clock, that is, between 3:58 and 4:01, while the towermen are positive it happened six or seven minutes earlier. All are equally positive of the accuracy of their observations and of their timepieces.

There is no disagreement whatever as to the freight train having the right of way and to its crossing being protected by every possible precaution.

The photographs from which the illustrations herewith are produced were taken by Mr. C. N. Reynolds, staff photographer of the Utica (N. Y.) Saturday Globe.

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The Canadian Power-Plant at Niagara.

It is, perhaps, only natural that the important hydro-electric plant which has lately been put in operation by the Canadian Niagara Power Company has attracted much less attention than the original installation erected on the American side of the falls by the Niagara Construction Company, although this Canadian plant is of much greater dimensions than its prototype as at first installed. The American plant was, however, a pioneer affair, involving many new departures, in which the engineers to the scheme were at times compelled to adopt their own views in opposition to existing precedents and to the strongly expressed opinions of many leading engineers. At the time the scheme was first mooted the largest turbine in existence was rated at not more than 1,000 horse-power, and a considerable confidence in the efficacy of the "rule of three" was necessary on the part of the designers, and even more on that of the business men financing the undertaking, to sanction without further experiment the construction of units designed to give 5,000 horse-power each. Neither was there any precedent for the support on a vertical shaft, running at 250 revolutions per minute, of a load of 80 tons. The various mechanical problems to be met were nevertheless resolutely faced, and so successfully that but few details were proved by experience to be in want of amendment, and the additions to the original plant for long marked no radical departure from the designs embodied in the units first erected.

The same general features have been largely followed in the Canadian plant, of which a detailed description was given by Mr. Cecil B. Smith in a paper read before the Canadian Society of Civil Engineers last January. Mr. Smith acted as resident engineer to the company for several years, and was afterwards engaged as consultant. As on the American side, the plan has been followed of constructing the power-house close to the intake from the Niagara River, and discharging the tail water through a tunnel opening into the Niagara gorge, a short distance below the falls. The tunnel in this case is 25 feet high, 19 feet wide inside of lining, and 2,200 feet long. So far as the mere cost of construction went, it would undoubtedly have been cheaper to erect the plant below the falls, conveying the water to it by an open canal. On the American side it was the cost of land which made this scheme impracticable, and on the Canadian side it has been a desire to preserve the amenities of the Queen Victoria Park which has made it necessary to face the additional outlay involved in the construction of a tunnel for the tail-race. When the original plant on the American side was under discussion, doubts were freely expressed as to whether the brick lining would be capable of withstanding the wash of the escaping water, which, with all the turbines at work, moves at a speed of some 27 feet per second. Mr. Smith, however, states that the brickwork, when examined, was found as good as ever, and was, moreover, covered with a slimy growth. The latter feature is remarkable in view of the rush of the water, and its presence seems a sure indication that the brickwork is not suffering serious damage.

The units on the Canadian side are much larger than those originallv erected on the American side of the river, being rated at 10,000, instead of 5,000 horse-power. The turbines also differ in construction, being of the inward-flow type, and fitted with draught-tubes, whilst their predecessors were outward-flow turbines, with a free discharge. The new generators, too, have internal revolving fields, instead of external ones. In other respects previous precedents have been followed. The main shafting, as before, is built up of riveted steel cylinders some 40 inches in diameter. The speed is the same—viz., 250 revolutions per minute—and the current is three-phase, generated at 12,000 volts, with a periodicity of 25 cycles per second. The wheel-pit, fore-bay and tunnel have been designed for ten 10,000 horse-power units, working together; but eleven will be erected, so that at full load there will be a reserve of one unit. Winters in Canada are severe, and consequently precautions have to be taken against the admission of ice into the wheels. In addition to large blocks of ice, the water also carries with it quantities of frazil ice, the admission of which into the penstocks is prevented as far as possible by suitable screens. Part of the fore-bay is roofed over, so as to protect as much as possible the workmen whilst engaged in keeping the screens free from ice. The construction of the intake works had to be commenced in a current of 10 feet to 12 feet per second. The first step taken was to inclose the area needed by a large cofferdam, consisting of two lines of timber cribs filled with broken rock, a puddle wall being built in the interspace between the lines of cribbing. The canal from the river to the fore-bay in front of the power-house is only some 130 feet long, but is nearly 300 feet wide at its narrowest point. It is designed to pass 8,870 cubic feet per second. A concrete-steel bridge crosses this canal, carrying the tracks of the International Railroad Company, as well as a roadway and foot-path. The wheel-pit is 570 feet long by 18 feet inside the lining. Its depth is 160 feet, the available head at the turbines being 136 feet. In building the power-house wood was used only for window sashes and for the frames of the smaller windows, the object in view being the reduction of the fire risk. Two sets of mains issue from the power-house, both being laid in conduits. Of these one leads to a transformer station half a mile distant, and the other to the steel arch bridge on which the cables are conveyed across the river. The ducts have four cableways each, and are laid in 7-to-1 concrete. The cables are 2½ inches in diameter, and each contains three half-inch stranded copper conductors. The transformer station is of 25,000 horse-power capacity, divided between twelve water-cooled transformers, which will be used to step up the current to 40,000 or 60,000 volts for distant transmission.

Mr. Smith's paper, from which most of the date above given have been abstracted, is copiously illustrated, and his comments upon the treatment of the many practical difficulties which arose in the course of the work will well repay perusal.—Engineering, London, England.

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Modern Passenger Locomotives.

Relative to the high steam pressure carried, and the large cylinders with which the modern passenger locomotives are equipped, Mr. T. P. Whelan writes in Railway and Locomotive Engineering of the disappointments experienced since their introduction, as follows:

"The failure of modern locomotives to fulfil expectations seems to be pretty general. There appears to be little inquiry into the cause, however, in so far as one can learn in current mechanical literature, but there surely must be some reason for it, and the writer believes it to be due to the inefficiency of steam of extremely high pressure at short cut-off. An engine carrying 220 pounds steam pressure having 20x24-inch cylinders and a 6-foot wheel represents a certain amount of power; that is, starting power. It does not follow that this engine, taking its starting power as a basis of calculation, will develop speed in a ratio parallel to that of an engine carrying but 140 pounds of steam, and it is its failure to do so that has caused disappointment. Not only that, but the amount of water and fuel necessary to make time with a comparatively slight increase of tonnage has occasioned much surprise among engineers running engines carrying extremely high pressure.

"It is the nature of steam that the more rarified the more sensitive it is to the cooling influence of the cylinders. This influence has little or no effect upon the starting power, when the steam supply to cylinders is backed up by direct pressure from boilers, but at short cut-off the expansive energy of the steam is not so effective in proportion at 220 pounds as at 140 pounds or less. The writer does not claim 140 pounds to be that at which the expansive energy of steam is most effective. It may be, and is most likely to be, some lower pressure.

"The reason is simply a matter of density, or heat carrying power. Steam at extremely high pressure is what is usually known as 'good dry steam' by engineers, and to say that 'good dry steam' must necessarily be wastefully used, is a bold statement, it being contrary to the general belief on that subject; but we have practical evidence of the fact at hand. The writer does not wish to be understood as favoring 'wet steam' ", but steam having "density necessary to retain a fair degree of heat, so that when the cut-off takes place the expansive energy of the confined steam will represent a reasonable proportion of power, which is not the case where very high pressures are used.

"The writer has had some experience in conducting steam from a boiler to a distance of 200 feet, where it was used in a process of manufacture in which a dangerous explosive was handled, making it necessary to have the boiler some distance from it. Steam at 100 pounds pressure was conducted through 1½-inch pipe, properly lagged. We found that the temperature of the steam at the end of 200 feet of pipe was not high enough. We superheated it after leaving the boiler and found the temperature at end of pipe considerably less than before.

"We all know that air discharged from an air pump hot enough to make the discharge pipe a 'cherry red' will not heat the main drum, which is but a short distance from the pump. Air lacks the heat carrying quality of steam, and readily imparts what heat it does carry to the absorbing influence of any cold surfaces with which it comes in contact. Highly rarified steam will do the same, though in lesser degree, when it comes in contact with the comparatively cool surfaces of the cylinders. This wasteful use of steam at high pressure is proving a serious handicap to the simple engine, and is furnishing good evidence that we have arrived at a period in the development of the locomotive when we must pocket our prejudices and adopt the compound principle, which, in spite of its failings is destined by sheer force of necessity to be the locomotive of the future for fast passenger service."

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A Locomotive Anniversary.

Seventy-five years is not a long period in the life of a nation, and is but little more than the traditional three score and ten allotted by the Psalmist as the span of man's life in this world; yet that interval has witnessed the development of the whole modern system of transportation. That system has been the most potent factor in the marvelous revolution which has taken place not only in the world's commerce and industry, but in all the relations of men and nations. The vast exchange of commodities and ideas which has been the direct result of improved communications has operated to produce changes in the condition and welfare of the inhabitants of the world comparable to those fundamental discoveries which ethnologists tell us led to that growth of the human intellect which first differentiated man from the lower animal orders. Just as the discovery of the use of fire and of the means of creating it at his will lifted the primitive man, and in a way analogous to the mathematical principle of permutations widened and extended his powers, so the perfection of transportation methods opened the way for the modern expansion of human activities.

Without the railroads and the parallel development of steam navigation, communities would have continued in a state of isolation, and there would have been neither room nor occasion for the spread of modern commerce, with all its attendant marvels and advantages. The Baltimore and Ohio Railroad does well, therefore, to mark the anniversary of its own early experiments in the first use of steam for the moving of passenger traffic in America. Historians may differ as to the actual details of the story of the locomotive in America, and there may be ground for dispute whether the date of the engine to which Peter Cooper first applied gun barrels in lieu of water tubes for the boiler was not 1831, instead of 1830; but the main facts remain that seventy-five years ago the steam locomotive was practically unknown in this country, and in the interval this marvelous piece of mechanism has been so perfected and strengthened that many of the railways of the country are being reconstructed to enable it to exercise its full powers.

The one or two little locomotives of that time, weighing about four tons and drawing with great uncertainty a tiny car with a handful of timid passengers or a few pounds of merchandise over a few miles of road, must be compared with present conditions if we would appreciate the significance of the transformation that has been wrought. Today there are in service on the 213,904 miles of railroad in the United States in the neighborhood of 50,000 locomotives. During the last year for which the official figures are available this motive power carried nearly 715,500,000 passengers and moved 1,309,899,165 tons of freight. To handle this traffic 1,798,561 cars were required, 39,752 of which were for passengers and 1,692,194 for freight. So varied is the service required of this vast train equipment that the lists have to be divided and subdivided properly to classify them for the needs of the statistician. Thus we read of four distinct types of locomotives, each in turn classified according to the number of driving wheels, pilot wheels and trailers. Under the heading of freight cars, again, there are many types and sizes—box cars, flat cars, tank cars, stock cars, refrigerator cars, etc., each classed according to capacity. These figures hardly convey an idea of the magnitude of the operations they represent, and when placed beside the tiny figures of the equipment at the beginning of railroad history are truly staggering. Even then they tell only a part of the tale, for the record takes no account of the enormous number of locomotives and cars that have performed their service and gone to the scrap heap. With the rapid changes going on today, and with more radical ones forecasted by the prospects of electric development, the record of the coming seventy-five years promises to be still more impressive and amazing.—Philadelphia Public Ledger.

* * *

Western Railroad Activities.[*]

An Important Railway Move.—It has been determined by the management of the Northern Pacific to construct a steel bridge across the Columbia River between the Washington and Oregon shores. This giant bridge will be built at Vancouver, Wash. Approaches are also to be built across the triangular peninsula formed by the confluence of the Columbia and Willamette Rivers, from Vancouver to Portland. Without doubt the proposed bridge will be the largest and most expensive structure of the kind west of the Missouri River. It will be the fourth bridge spanning the Columbia, though the other three are comparatively small structures and built of wood, being hundreds of miles above Vancouver.

One of these bridges is located at Marcus, Washington, and another at Northport, near the British Columbia line. Both are on branch lines of the Great Northern. The third bridge spans the Columbia on the Canadian Pacific's Nelson-Rossland line.

Fifteen years ago the Union Pacific built the foundations for a steel bridge to span the Columbia at Vancouver, but the project to construct the bridge was subsequently abandoned. On these foundations the proposed new steel bridge is to be constructed. At that point the Columbia is about a mile in width. As this mighty stream is subject to an annual rise of many feet, the bridge will have to be built above the highest water mark. Its construction will involve the outlay of an immense sum. Two years ago President Lamont obtained from Congress the authority to construct this great bridge, and, at the same time, the right of way through the United States military reservation at Vancouver Barracks. He also secured the authority to construct a line from Wallula to Vancouver, Washington, a distance of 250 miles.

This will be a most important line, as it will afford the Northern Pacific two entrances to Portland on its transcontinental road; besides, the route via Wallula is shorter and more direct than around by way of Tacoma. Then the new line will traverse a fertile region now somewhat remote from railway communication.

Another very significant fact is that Engineer Rice, of the Northern Pacific, was at the Dalles with a large party of surveyors for the purpose of re-surveying a line along the north (Washington) side of the Columbia down to Vancouver. It is asserted on good authority that the work on this line will be commenced within the year unless trackage rights are accorded the Northern Pacific over the Oregon Railway and Navigation Company's line. It is hardly thought probable that these trackage privileges will be allowed. In that event, it will signify that the Northern Pacific will parallel the O. R. & N. Co.'s road between the Dalles and Vancouver—a most important railroad movement. Between the Dalles and Portland the Oregon Railway and Navigation Co.'s line (Harriman System) follows the Columbia very closely along the Oregon bank.

Not within the last two decades has there been such great railroad activities all along the Pacific Slope, especially in the Northwest, as now prevail.

Serious Problem of the Salton Sea.—For some time past the Southern Pacific Railroad Company has been confronted by a serious problem at what is known as the "Salton Sea," or "Salton Sink," located in the extreme southern part of California. As the name "Sink" implies, it is an immense area situated far below the sea level—a great basin whose average floor is of a uniform grade.

Several years ago the Colorado Development Company constructed an irrigation canal extending from the Colorado River over into Salton Sink, for purposes of reclamation of its arid lands.

Recently, in making some changes to the irrigation canal, the Colorado Development Company unfortunately allowed the water from the Colorado River to get the advantage at the main head gateway. All efforts made by the company to stay the great rush of waters has thus far proved unavailing. During the higher stages of the Colorado River, the rush of the floods has been irresistible. As a natural result, the sink has been converted into a vast inland sea. A large part of the sink has been entirely inundated, and the loss has in the aggregate been immense. One of the heaviest losers by this flood is the New Liverpool Salt Company, whose very extensive works, plant, etc., are located in the Salton Sink. These works have been inundated, and great losses entailed—the dissolving of immense stores of salt, etc. The works have also been rendered temporarily useless. The latter will prove a total loss, unless the point of the inrush is closed. It is claimed that the Colorado Development Company is legally responsible for these heavy losses, and that litigation is now pending against that corporation for heavy damages.

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[*] Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

Of course, the loss to the railroad company has been, is, and will be great, and unless some plan is speedily devised to stay the inrush of the floods, the damages will be irreparable, for it will involve the abandonment of the road across the Salton Sink, and necessitate a new route and a new road.

For some time a large force of men have been engaged in building up and dyking the submerged and sinking track. The latest news from Salton is of a very discouraging character. The waters are still rising steadily, despite every effort made to close up the wild inrush from the river. The Colorado River is known as a most turbulent and intractable stream. Emergency calls for more men have been made, and the working forces greatly augmented.

The mighty force of the floods has cut a wide and deep channel which the present high stage of water greatly increases. But little of a permanent character can be effected until the angry river recedes. The situation for the railroad presents a very serious aspect, unless the inrush can be cut off very soon. Engineers are consulting as to some plan that will give both immediate and permanent relief. By the construction of a jetty 3,000 feet long, extending into the Colorado River at a point a mile above the intake of the Colorado Development Company's canal, Southern Pacific engineers will attempt to divert the flow of the river to the east side of the channel, away from the canal intake on the west side. This will be about a mile above the intake. Telegraph poles along miles of the track have sagged, and were propped up with great difficulty. Many Indians from Yuma, Arizona, are employed to work in, and under the muddy floods. Immense quantities of stone are being shipped to the scene to be used in building dykes against the steady rise of the waters.

If the latest report that the entire flow of the Colorado River is pouring into the Salton Sea proves correct, it means that there is grave danger that this sea will be permanent, and important climatic changes in the southern country will result. The great delta at the mouth of the Colorado which has been growing rapidly has apparently dammed the mouth of the stream. This has been feared for some time by the irrigation engineers at work along the stream. The Colorado carries an immense amount of silt in flood time. Part of it has gone to raise the level of the river's bed, while still more has been deposited at the delta.

If the channel permanently changes it will be more than human energy can accomplish to turn the river back to its old bed. In that event, the Southern Pacific will have to construct a complete new track at least 25 miles long around the sea, from Martemere to Volcano. This work will involve the outlay of a large sum of money.

To be a Double Track.—The board of directors of the Ocean Shore Line Road, now being built from San Francisco down to Santa Cruz, have decided to make the proposed electric line a double track instead of a single track line as originally proposed.

This change in the company's plans will involve an increase in the capital stock from $3,000,000 to $5,000,000, and the creation of a bonded indebtedness of $5,000,000. A meeting of the stockholders has been called to act on the proposition to increase the capitalization and bond issue. The company announces that it has completed its surveys and rights of way, and is now engaged in grading the first 14 miles of track from Santa Cruz northward. It has obtained from the Secretary of the Interior a right of way for 6,000 feet along Waddell's Beach, which is part of the public domain.

Meeting of Railway Surgeons.—An interesting and important meeting has lately been held at San Francisco, Cal., by the Pacific Association of Railway Surgeons.

The opening address of the president, Dr. N. H. Morrison, chief surgeon of the Santa Fe lines, was interesting, especially as it dealt with methods of sanitation as applied to lines of railways. Dr. Morrison called attention to methods of sterilizing drinking water for use on the trains; made a strong argument for conservative surgery in cases of accident, advising less haste in operation after railway injuries, and decrying the lust for operations that at times exists.

From a medico-legal standpoint, his remarks were of great interest, for the injury department of each railway system has many cases to adjust each year. As a rule, the company knowing its responsibility settles promptly, but the "profession of getting hurt" is adding to its numbers daily.

The railway surgeon is presumed to protect the road and the individual, giving equal and exact justice to each. The mishaps on railroads are almost always due to preventable causes. The turning of a switch, the breaking of a wheel, the giving away of a bridge, are the things that care would prevent. The railway surgeon deals with the result of this carelessness, and his duties are very arduous.

During the session interesting papers were read on various phases of surgery and practice in connection with railway casualties generally, by Drs. Thomas L. Nagee, Robert W. Miller, C. W. Kellogg, C. C. Browning, O. P. Askam, J. A. Colliver, A. W. Morton, S. E. D. D. Pinniger, C. L. Abbott and W. L. Moore.

The following officers were elected to serve for the ensuing year: Dr. T. W. Huntington, San Francisco, president; Dr. T. C. McCleave, Berkeley, first vice-president; Dr. W. O. Spencer, Huntington, Oregon, second vice-president; Dr. Frank L. Adams, Oakland, treasurer; Dr. James P. Dunn, Oakland, secretary.

The members of the executive board and other committees will be appointed by the new president later. It was decided to hold the next annual convention in San Francisco. It will be held some time in August, and the exact date be later announced by the president.

To Operate the United Railroads System.—The California Gas and Electric Corporation of San Francisco is now engaged in erecting three of the largest gas engines in the world. Some months ago this corporation entered into a contract with the United Railroads Company of San Francisco, to supply all the electric power the railroads will require during the next 20 years in operating its many lines. The latter corporation owns and controls nearly all the street railway lines in and about San Francisco.

The agreement goes into effect February, 1906, and in order that the corporation may be able to live up to its contract these immense gas engines are now being erected as auxiliaries to the transmission line service, bringing power from the interior, which will supply the railroads under ordinary circumstances.

If the latter service fails at any time, it will be possible to furnish power from the local plant almost immediately. Each gas engine, which is as large as a house, has 5,333 horse-power, about five times the horse-power of the largest engines ever used for the same purpose before. Usually an engine of this type takes about an hour to reach the requisite temperature, but this can be accomplished on the new engines in less than a minute.

The gas engines are started by electric generators, which are themselves of unusual size. Each generator is connected with an engine and has a horse-power of 5,333, equal to that of the engine to which it is attached.

In connection with the plant will also be three gas holders. Two of these will have a capacity of 200,000 cubic feet each, while the third will have a capacity of 1,000,000 cubic feet. All the other necessary attributes of an immense power plant will be included in the equipment, and the total ground space occupied will be 15 acres. Although the intention is to use the plant as an emergency station, still, one of the big engines will be run constantly, the power being used in connection with that furnished from the interior.

Considerably more than $1,000,000 will have been expended before the plant will be in running order.

The California Gas and Electric Corporation has a system of transmission lines throughout the State, covering a territory of 15,000 square miles. They are over 1,000 miles in length and all center in the new plant. Practically, all large cities and towns of California are supplied with power by the corporation, which has, however, never heretofore entered the local field. It is denied that the corporation is to supply anyone but the United Railroads System of San Francisco.

A Railroad Official Promoted.—Paul Shoup, who has been division freight and passenger agent of the Coast Division of the Southern Pacific, with headquarters at San Jose, Cal., and prominent in Pacific railroad circles, for past years, has received another and more responsible position. It is that of assistant general freight agent of the Oregon Railway and

Navigation Company, with headquarters at Portland, Oregon.

Mr. Shoup succeeds H. M. Adams, who has accepted a position in the traffic department of the Great Northern Railway. The selection was made by J. C. Stubbs, General Traffic Manager of the Harriman lines.

Mr. Shoup is possessed of a good deal of literary ability, which he has utilized in the composition of pamphlets exploiting the advantages and attractions of California. He was at one time known as a short story writer of much merit. Shoup is yet a young man, being only 30 years of age, but by the heads of the Southern Pacific his judgment is implicitly trusted.

Large Stock and Bond Issue.—The stockholders of the Southern Pacific Railroad Company have decided to increase the capital stock to $160,000,000 and to authorize an issue of $160,000,000 of bonds. The company was recently formed by a merger of the Southern Pacific Railroad of California, Southern Pacific of Arizona, and Southern Pacific of New Mexico. It practically owns and controls all of the Southern Pacific properties in New Mexico and Arizona, and all in California, save the Central Pacific and the South Pacific Coast roads.

Of the 160 millions of new stock, the sum of $128,307,960 is to be used to complete in legal form the consolidation of the three companies mentioned into the new merger. The remainder of the stock will be issued as the directors in their judgment may deem best; but it is not likely that any of the stock will be issued for some time to come.

The proposed bonded debt of $160,000,000 for the merger company is to be used for two purposes. About $70,000,000 of it will be used to retire the old bonds of the three companies joining the merger. These bonds bear 5, 6 and 7 per cent. interest annually and many of them fall due this year and during the next three or four years. Others of the new bonds will be used for improvements from time to time.

WRECK ON THE NICKEL PLATE RAILROAD, NEAR LORAIN, OHIO, AUGUST 13, 1905

Western Pacific Railroad.—At a recent meeting held by the directors and stockholders of the Western Pacific Railroad, it was formally determined to increase the capital stock of the company from $50,000,000 to $75,000,000.

Mr. W. J. Bartnett, Judge J. F. Vaile, of Denver, and several local parties held the stock proxies of George J. Gould and other prominent easterners to vote at the meeting. Mr. Bartnett is the first vice-president and chief counsel of the company, and Judge Vaile is chief counsel of Gould's Denver and Rio Grande Railroad System.

Mr. W. F. M. Cutcheon, of New York,

representing the New York banking houses of Blair & Company, W. Solomon & Company, and W. A. Read & Company, was present at this very important meeting. It was these three banking houses which recently took the $50,000,000 bonds of the Western Pacific Railroad Company at a commission that netted them a good round sum, and gave the company for purposes of construction $45,000,000.

About all the necessary legal steps prior to actual construction work by the company have now been taken, and the contracts for heavy grading of the roadbed have already been let in New York.

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Superheated Steam in Locomotive Service.

Prof. W. F. M. Goss, of Purdue University, read a paper on this theme before the Franklin Institute of Philadelphia, March 2 of this year, which has just been published in the proceedings. It gives an excellent account of the conditions, development and present state of superheating, including description of the Schmidt, Pielock and Schenectady systems, which have been illustrated and described in these columns. Prof. Goss's conclusions are interesting and valuable. They are as follows:

Concerning the Probable Success of Superheating in Locomotive Service.—The prediction of Professor Peabody, already quoted, to the effect that all superheating devices will in the end be discarded, has doubtless been generally accepted by the rank and file of American engineers. For them the problem has had no mysteries. They have understood the thermodynamics of the problem. They have admitted that the use of superheated steam in engines is always attended by a more efficient cylinder action, but past experience has taught them that the difficulties in maintaining a superheater were too great to justify its continued use. They have argued that since this was true 30 years ago when steam pressures were so low that the temperature of the superheated steam was less than that of saturated steam of today, the problem of superheating is now vastly more difficult than it has ever been before. The prevalence of this view in this country naturally leads many to question whether even Germany's great progress and the more recent but equally promising start of the American Locomotive Company are as yet sufficient to insure a future for the practice. In raising this question it is not intended to minimize the value of the elaborate researches of Schmidt, Schroter and other German investigators, or of the equally valuable experience which has been gained in the application of principles. The endeavor has been made to make the fact clear that between apparently most promising and even masterful experimentation and an assured success in practice, a broad gulf is fixed, and that the voyage across is not yet finished.

Turning now from convictions based on previous experience, and approaching the subject without prejudice, it is well, first of all, to recognize the fact that when a principle in operation is correct and when it is generally understood, it is never safe to assume that the means whereby it may be utilized will forever fail to be forthcoming. The reverse is likely to be true. The efforts to use superheated steam in the cylinder of an engine are based upon correct thermodynamic principles, and hence, sooner or later, practice will embrace it. Again, it goes without saying, that with the better materials and larger experience of today, the problem of producing and utilizing superheated steam can be approached with greater certainty than was possible in the practice of many years ago. Proof of this is to be seen in the degree of success already achieved.

Examining the question broadly, we shall find that locomotive service is more favorable to the use of the superheater than any other in which it has been tried. The installations with which we have hitherto dealt have served in stationary or marine practice: The superheater of these plants has either been a separate boiler-like device, in which no water was carried, or has been so combined with the boiler as to always be in close communication with its furnace. Under these conditions, when the engine throttle is closed, the circulation of steam within the superheater tubes ceases and the metal of the tubes, together with the entrapped steam within them, remain exposed to the undiminished intensity of the furnace action. In this manner, the tubes are often heated to very high temperatures, a result which when frequently repeated leads necessarily to a failure of the superheater. Again, when after an interval of inactivity, the engine is started, the steam which has been held back within the superheater until it has been raised to an enormously high temperature, passes on to the engine, oftentimes retaining enough of its heat to burn the lubrication and sometimes to destroy the rod packings. But all difficulties of this class which to a greater or lesser degree have appeared in the operation of every stationary engine plant using superheated steam. are doubtless avoided in the locomotive. for in this machine, the rate of combustion varies with the volume of steam used. When the throttle is open, the fire burns brightly; when it is closed, its activity is at once suppressed. When there is no steam passing within the tubes of the superheater, the gases circulating around the tubes are comparatively low in temperature, and when the conditions are so changed that the temperature of the gases becomes maximum, the volume of steam passing the tubes is greatest. Just as the draft of a locomotive responds to the varying demands which are made upon the boiler, so the volume of heat which is available for superheating varies with the quantity of steam which is to be superheated. The details of several of the designs described provide that when the blower is on, dampers are closed, which prevent the circulation of gases in the superheater, so that it is only when the throttle is open that the superheater does work. While it is my opinion that the automatic damper is in fact unnecessary, it is certainly true that with it overheating of the superheater becomes impossible. In view of the highly favorable character of all these conditions, it is likely that it will be found easier to maintain a superheater on a locomotive than in connection with any other type of engine, and, moreover, that superheating in locomotive service may be a pronounced success, while in other classes of service its future may still be problematical.

Efficiency and Power.—It may be accepted as beyond question that the use of superheated steam will materially improve the efficiency of the locomotive. The saving resulting from its use is a two-fold one. For the development of a given power, the cylinders of the superheating locomotive require less steam, and as the demand for steam diminishes, the efficiency of the boiler increases, so that there is not only a saving in steam but a proportionately greater saving in coal. The German claim that 25 per cent. of the coal burned is saved by the use of superheated steam is as a general statement probably extravagant, but it is not so high as to be impossible.

Again, while economy in the use of fuel is of great importance, it is in many classes of service secondary to questions affecting the output of power. Modern conditions impose many restrictions and limitations as to the weight and dimensions of a locomotive, while at the same time they call for the development of greater power. It is, therefore, important to note that in locomotive service anything which improves the efficiency of the machine may be utilized to extend its limit of power. The power delivered per unit weight of coal burned and also the power delivered per unit weight of locomotive, is increased by the use of superheated steam. It appears, therefore, that one way in which the power of locomotives may be increased is to equip them for superheated steam.

Obviously, it should not be claimed that full advantage is to be had of the increase of economy and of power at the same instant. One effect is always sacrificed for the other. Under ordinary conditions of running, full advantage is derived from the improved economy while in an emergency when the locomotive must be worked at its maximum power, then at a temporary sacrifice of efficiency, limit of power may be raised.

Incidental Considerations.—A fact of interest which should appear in the use of superheated steam is a decided improvement in steam distribution which indeed may constitute a factor in the resulting economy. With superheated steam, the initial condensation is suppressed and the ports are required to pass only that steam which is effective in doing work, whereas with saturated steam they must pass in addition to this, that which is represented by the initial condensation. Assuming port areas to be the same, those for a superheating locomotive are in effect from 20 to 25 per cent. more liberal than for a locomotive using saturated steam. In high-speed service this becomes a matter of consequence.

An objection frequently raised against the use of superheated steam is to the effect that it increases the difficulty in cylinder lubrication. Troubles of this kind have in fact been common enough in stationary practice, but the fact should not be lost sight of that they have followed a period when for some reason the superheater has been overheated. Under normal conditions, an engine supplied with superheated steam has saturated steam in its cylinders, and the maximum temperature of the cylinder walls is not higher than when saturated steam is used. It has already been shown that there is little danger of overheating a locomotive superheater and consequently difficulties with lubrication are not to be found.

In conclusion, to briefly summarize preceding statements, it appears that from an academic point of view, the conditions of locomotive service are very favorable to the use of superheated steam; that its use makes possible a better distribution of steam, it greatly improves the economic performance of the locomotive and increases the capacity of the locomotive for doing work; that the maintenance of the superheater is not likely to prove serious nor is any trouble to be expected in securing satisfactory cylinder lubrication; that the adoption of superheated steam in locomotive service can probably be accomplished without greater difficulty than that which attend the introduction of any other important detail entering into locomotive construction; and that substantial progress has already been made in the application of the principles involved.—The Railway and Engineering Review.

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BREAKING UP OF THE RED RIVER

(Courtesy Bro. J. H. Baldwin, 597, Winnipeg, Man.)

Echoes from the Firing Line

No Such Thing as Poor Coal.

Through reading an article published in Railway and Locomotive Engineering and seeing the same reproduced in the Locomotive Firemen's Magazine, containing the remarks of the general master mechanic of a prominent southwestern road, I wish to state my views.

This gentleman has started a debate of very high degree among the firemen and engineers, who really "know the difference" between good and bad coal. Now isn't there something wrong with this man when he states that there is no such a thing as poor coal on locomotives of today? With the experienced firemen and engineers I do not believe there is a man in the service who will not endeavor to do his duty. The delaying of trains is not always the fault of the engine crew or due to that "good coal" he speaks of. Certainly she had not ought to leak, either, and being a good steamer had not ought to be two or three hours late. Then if the cause was poor coal, get jacked up in the office for saying so. Better learn to burn concrete (no smoke to that). But when he says that an engine has gone over the division of 250 miles without shaking the grates or having to clean out the ashpan, what kind of coal does he use?

I have burned Illinois coal and I have had it clinker. He can say that there is no such thing as clinkers, and that the word clinker is not the proper word to use. Well, I do not care what word he uses, but it is "clinker" according to Webster, anyhow. He is very fortunate in getting first-class coal to burn, therefore no cause for detentions on the road, thus economizing in great saving by the firemen and engineers in making out the required forms for these causes, saving the printer's bill, stationery and lead pencils. This economy should soon build another railroad for him. Now, I would say to the gentleman that I have pulled clinkers out of a firebox which were a foot thick, the whole grate surface being covered, and had to break them up with a slash-bar, they being so hard that they would not shake through the grates, then go to work and build a new fire, get about 20 miles further and pull clinkers again, 80 cars behind us, 40 hours on a trip, and work like that from start to finish, cleaning fires in passing sidings and at all water plugs. I guess the gentleman has never seen or heard of Grass Flate coal, but if he would like to try some of this there is enough in the mountains of Pennsylvania, near Clearfield, to disgust all of the firemen on the whole system under his charge.

Some people who talk about the economy of fuel do not stop to think that one can economize in more ways than one, and if one understands firing and combustion, he economizes every day for the company but receives no credit. If such men did not harp on one question it would be another, and the fireman can keep on grinding, no matter what he has to burn. It has been found that the coal we have to burn is that which the company can not sell for other purposes. I once had a dispatcher inform me that I had good coal to burn, and that it was the only kind that was always furnished. So I carried up a bag full to his house to try, and after looking at it he asked what it was. I told him it was "some of that good coal; try it." Well he got hot over that coal right quick and popped for thirty minutes after I left him, and he has been "badly clinkered" ever since.

MEMBER.

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The Double Firedoor.

I saw an article in the July issue of the Magazine in which a boiler-maker foreman made some statements in favor of the single-door engine, and disapproved of the double door. The article also intimated that there would probably be no more double-door engines built, and that they would become obsolete.

I am a fireman of several years' experience in firing both the single and double-door engines and have always favored the double-door type, and I could not let an article like that go unanswered. I decided to state my views and those of other firemen who fully agree with me, that we would rather fire a double-door engine.

The fireman is the man whom the modern locomotive affects the most, and it seems as though if it could be designed to make the work easier for him it should be done.

In speaking to boilermakers who repair these engines, I find that they approve the double-door engine. They find less broken stay-bolts, less cracked sheets and also find the flues in better shape. One of these men is a foreman on our road.

Most of the locomotives now built are of the wide firebox type, and when they have the single door it must necessarily be large. A man engaged in firing stands directly in front of this door, and in putting the coal along the sides and in the corners he is facing the heat continually. The heat from these large doors is terrific and in my experience it is the heat that overtaxes the fireman the most. Besides he has to continually stand the strain of putting the coal to the opposite side.

With the double-door engine he stands in the middle of the deck, and the doors are smaller and are on each side of him. They are situated near the sides and there is no strain on him in putting the coal to the sides and corners of the firebox.

He only has one door open at a time, consequently there is less cool air going into the firebox. He shovels both ways, which is not very hard to learn, and the new fireman has but little difficulty.

It has been proven that the double-door engine is the most economical, which is vastly in its favor. I hope this will find favor with some of the readers of the Magazine, and that they will take up the cudgel in defense of the double-door engine. G. TRACHTA.

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No Such Thing as Poor Coal.

I read with great interest all issues of the Magazine, but the article entitled "No Such Thing as Poor Coal," which was published in the August number, and purporting to be remarks made by the general master mechanic of a prominent southwestern road, is surprising. The conclusion is reached that firing on that road has become a fine art. For myself would say, "I should say so." If there is no poor coal, why do the intelligent men on the engines report at the end of a division, "Engine would not steam on account of poor coal?" I have fired a few good engines and a few bad ones, and could do better with lump or run of mine coal on good or bad engines than with slack or a poor grade of coal. I know that the question of fuel is about the most talked of question on the railroads or in the offices. There can be more improvements made in the engines than in the coal.

Now when a coal burner or a fireman can burn the ashes and clinkers (if engines on his road make any at all, and I hope they don't), and not have to stop on the main line or siding and clean out a pan in 150 or 170 miles on a consolidator, he has a fair to middling good job of railroading. It is not so with us. Here at this station I can see the boys clean out their pans very often going west or north, but do not have it to do going east—same number of miles. Why? One reason for this is that we do not burn as much coal going east and the greater part of the road is down hill. I think that we have about as good a grade of coal burners here as dare take up a pick, and they complain of poor fuel.

Most any good steaming engine will steam with good coal, but I do not see any poor steaming engine steam with slack or the kind of coal that when thrown on the fire turns black and clinkers on the grate, and if it was not cleaned out more often than they do on the road in question would die a natural death. I would like to hear more from those dear boys who have such records, for it is news to me and very interesting. I am not from Missouri, but you will have to show me this time. MEMBER.

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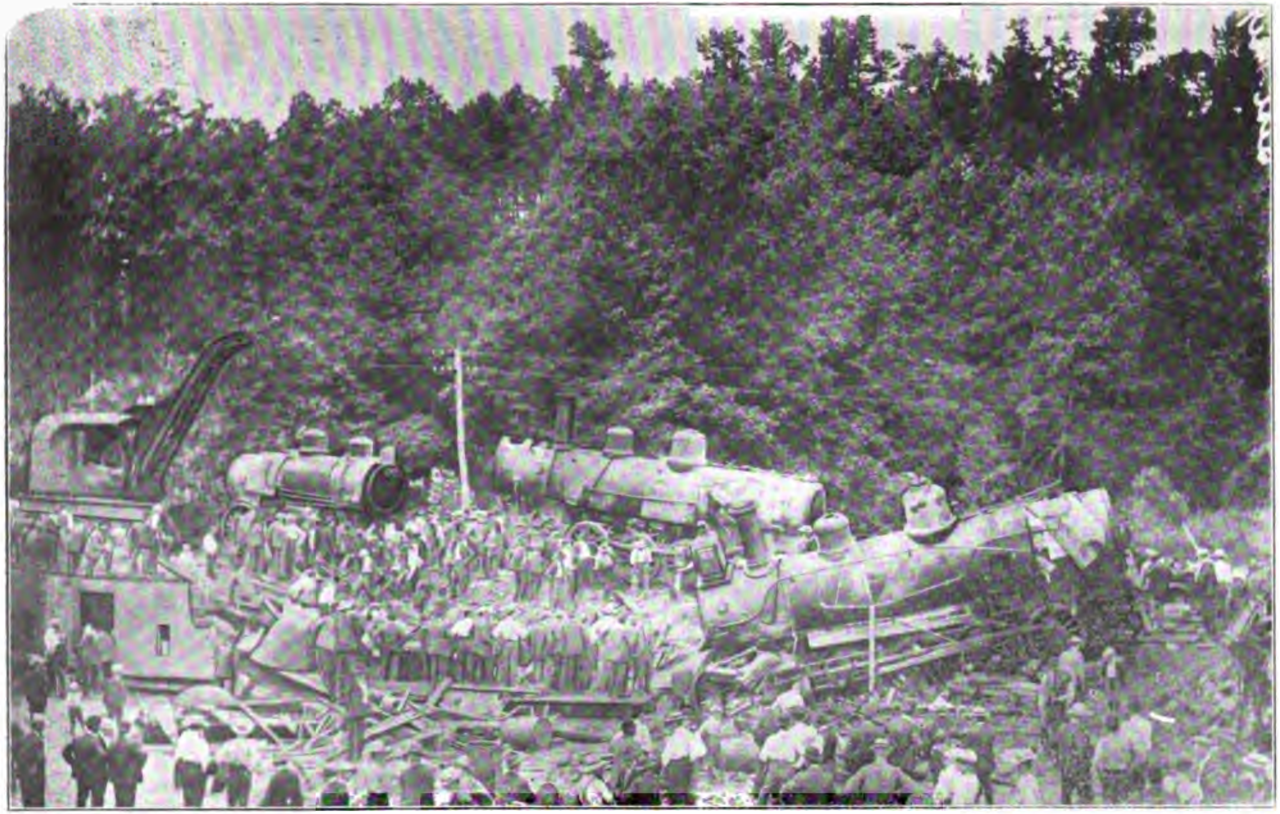
Wreck on the Western Maryland Railroad.

A serious and fatal wreck between a double-header freight train and a passenger train occurred on the Western Maryland Railroad, near Patapsco Station, Md., June 17, 1905. The accompanying illustration shows the positions of the engines directly after the collision occurred, which was between extra east, engines 41 and 43, and No. 5, westbound.

It seems that the crew of the east-bound train forgot the passenger train. There were seven killed and twenty-eight injured, some of the latter dying later. The injured were all members of a wrecking crew who had been clearing up a wreck at Mt. Hope, Md., and were returning to their homes on No. 5. The instantly killed were Engineers G. Covell, L. D. Rice and J. D. Crouse (the two former being members of Division 233, B. of L. E); Firemen J. J. St. Ledger, of Lodge 214, B. of L. F.; W. H. McNamee and E. Knipple, and Conductor Vernon Derr,



WRECK ON THE WESTERN MARYLAND RAILROAD, NEAR PATAPSCO STATION, MD., JUNE 17, 1905 of the B. of R. T. Fireman Knipple was on his first trip on duty.

The mail and baggage cars of the passenger train were totally wrecked, the coaches having been saved by an emergency application of the air brakes. The twenty-eight injured men were riding in the baggage car and on the platform. Bro. N. O. Shoemaker, Master of our lodge (512), was assigned to passenger run No. 5, but it happened that on the day of this wreck he was transferred to another train, the Blue Mountain Express, a summer train to accommodate the numerous summer boarders in the Blue Ridge Mountains.

F. D. Harbaugh.

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No Such Thing as Poor Coal.

After reading the article entitled, "No Such Thing As Poor Coal" in the August issue of the Magazine, I have come to the conclusion that the gentleman certainly must have a fine system of firing locomotives. He, I should judge, from the position he has attained as general master mechanic of a prominent southwestern road, must be fairly intelligent and perhaps knows what he is talking about, but four days and four nights is a long time for even a switch engine to go without cleaning the ash pan, and running an engine 250 miles without even shaking the grates and not having clinkers form is wonderful.

A position as fireman under these conditions must be a snap, and I for one would like to learn more of this system. Can any of the brothers on that road enlighten us as to the size of the ash pans on those engines, the tonnage of trains hauled over those 250 miles, time consumed covering the distance, etc.

Geo. R. Huntley.

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An Echo from a Real Battleship.

The following comes from a fireman or "stoker" on a *real* battleship, viz., H. M. S. "Prince of Wales," Mediterranean fleet, British navy, written at Malta:

"I must tell you, sir, that I have not had the chance to get home yet, owing to the large number of fever cases being sent off the station. However, I hope before long to be able to take a run home. I thank you, dear sir, very much for taking so much trouble and care in sending my Magazine to me each month. I get it in the very best of order. I do not think I can tell you how eagerly I look for the Magazine to come. I take great delight in reading it through every month, and I can truly say I have learned a great deal since I started reading it. I like to read the 'Echoes from the Firing Line' and 'Correspondence,' but I hardly understand what is meant by what the different brothers call the 'goat.' I have often sat and thought what the meaning of the word goat was. Sometimes I think it is a real goat, and at other times that it is the head brother of the lodge.

"It is very interesting to me to read a letter from the road, and I often wish I were running on my engine again. I hope the time will soon come when I shall be back home on a locomotive.*

"Nearly all of our battleships are fitted out with water tube boilers called 'Billville,' and four hours down below at one stretch is quite enough.

"I only wish I had known of the Magazine long before I subscribed for it, as I would have had an opporunity to gain still more knowledge. I hope all the boys are enjoying the summer weather over the water. We are having it pretty warm here.

"Wishing the Magazine and its editor more success as the years roll on, and a bright future, believe me to remain,

"W. Venables."

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Position of the Saddle-Pin.

The August number of the Magazine contains in answer to the question, "Why is the saddle-pin placed back of the center of the link, instead of in the center?" the statement that the saddle-pin is so placed to overcome the angularity of the main rod. Mr. Frederick A. Halsey, author of "The Locomotive Link Motion," claims to have first pointed out that this is not the case, but that the offset of the saddle-stud is in the opposite direction from that which would be required to adjust the irregularity introduced by the angularity of either the main rod or the eccentric rods, and is in the direction and of the amount necessary to compensate at some particular point of the stroke for the difference between the sum of these two irregularities, and the one greater than the sum, caused by the offset of the link pins back of the link arc. Mr. Halsey's explanation proves conclusively the position he takes. The thought of it is somewhat as follows:

As the crank-pin moves from the center to either quarter, the angle between the main rod and the wheel and crosshead center line gradually increases, decreasing to zero again as the pin approaches the opposite center. The effect of this varying angle is that at all times during the rearward stroke, the crank-pin and hence the eccentrics, link and valve, have moved through a proportionately less distance, and during the forward stroke a proportionately greater distance of their stroke than the piston, giving for all gears a cut-off later for the rearward than for the forward stroke.

Now, since the nearer the center of the link is to the link block the earlier the cut-off will be, it is possible by so suspending the link that its center will be nearer to the link block during the rearward than during the forward stroke to obtain from this cause a cut-off enough earlier for the rearward and later for the forward stroke to overcome at any point we desire the main-rod irregularity, and give—if no other irregularities were present—an equal cut-off for this point of the stroke, but this movement of the link requires an offset of the saddle stud in front instead of behind the link arc. An offset back of the link arc causes the link center to be always farther from the link block during the rearward than during the forward stroke, giving, as does the angularity of the main rod, a later cut-off during the rearward stroke. This proves the presence of at least one other irregularity greater than that of the main rod, and requiring an offset of the saddle stud in an opposite direction, and this irregularity further study will show to be that caused by the offset of the link pins back of the link arc.

R. G. Donaldson.

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Locomotive vs. Stationary Engine Practice.

Only a short time ago I left railroading altogether and accepted a position as a stationary fireman. I read with great interest the articles in the August issue of the Magazine on lubrication, radiation, and pure feed water.

Now, those articles relate to stationary just as much as they do to locomotive work, and I was indeed greatly surprised to know that our Magazine could be of such interest to men in stationary plants.

The articles named are not the only ones of interest, but are the principal ones that bear in any degree on stationary practice. I hope the Magazine will continue to grow along that line, when it may be possible to secure the subscriptions of men who are employed as stationary engineers and firemen to our worthy publication. Wm. H. Dalley.

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No Such Thing as Poor Coal.

Replying to the remarks made by a general master mechanic of a certain southwestern road before the recent Master Mechanics' Convention, I would say that, judging from what he says in regard to poor coal, he never fired a modern locomotive, nor did he ever burn Illinois coal.

I fired Illinois coal for four years, and in the best engines that I have ever been on, and found that it would clinker under all but the best of conditions. Furthermore, when he asserts that they run a 20x26-inch switch engine for four days without cleaning the ash pan, it is safe to say that the pan was left open and the ashes and slate, that I know from experience are in Illinois coal, were shaken out to the ground.

I would refer the gentleman to the management of the C., B. & Q. road, where they burn the third vein Ladd coal, and have long finger grates, the fingers of which are 10 inches long, and the only way they get the big slabs of slate out of the firebox is by means of a large hook with which they pull them out of the firebox door, after they are broken up. I would further refer the gentleman to Mr. N. Frey, M. M. of the C., B. & Q. between Minneapolis and Savanna, Ill., where they have the best engines that I have ever fired in my seven years' experience, and see what he says about clinkers, where the coal melts and runs into the ashpan like water, and runs the grates together like one solid mass of iron, reminding one more of a smelter than a modern engine. Let the gentleman ride from Glendive, Mont., to Livingston, on the N. P., where they burn Red Lodge coal, and the fireman has to clean his fire at the depot before leaving, and see what he says about poor coal and clinkers.

It is useless for the gentleman to make such assertions as "there is no poor coal" and "coal will not clinker," for I heartily believe there are firemen on locomotives today who can do nearly as well on a "modern ocean liner" as can this gentleman, and I never heard one of them say that Illinois coal will not clinker. The only men I ever heard talk as this gentleman does were a few laboratory men who never saw active firing.

MEMBER.

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A Line from West Texas.

On our road we have three classes of engines, Cooke, Rogers, and Baldwin, but on the division on which I am employed we have only Rogers and Cooke engines. They have the long, narrow firebox, but are not as large as some I have seen, having three pair of driving wheels.

This division is 196 miles in length, but we are allowed 200 miles for the trip. When about half way over the division the fire is cleaned by two Mexicans who are provided for the purpose, while we go and get lunch. We take coal twice during the trip.

We have some very good engineers here, as well as a few who are not so good, but of course these can be found anywhere, and we have a very good master mechanic.

It takes from ten to fourteen hours to make a trip, and we run over another road for about half the distance. The other road has different rules from those practiced on our own road, and sometimes we have a little trouble getting through.

Business is dull at the present time, but we have good business in the winter and spring. MEMBER.

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Steam and Electric Power

In contrasting railway traffic by steam or electric power the subject resolves itself largely into a matter of public convenience. There is little question that it is more pleasant to ride in an electric train with no smoke and no odor. On the other hand, the steam train has the advantage of each train having its own motive power, and being more of a self-contained equipment.

On electric lines, if anything happens to the power house or overhead lines, every train on that section of the road is at a standstill until the damage is repaired, and if it is line trouble and far out considerable time is lost in reaching the location of the trouble, especially if there is no steam locomotive at hand. One of the peculiar adaptations of modern engineering is the method of having portions of a road operated exclusively by electricity, while other parts are operated by steam locomotives.

In one particular line of this sort with 20,000 volts alternating current stepped down through transformers and the rotary converters to 550 volts direct current, the road was operated for the first six months by steam, both for freight and passenger trains. Then, having completed the installation of electric machinery and the necessary overhead work, the road was operated entirely by electricity. The electric service was continued for about eight months, using in the freight service an electric locomotive of 120 h. p. This locomotive would handle five carloads over the heaviest grades, but it was soon found in operating a freight line that it would not do to take a part of the goods and let the rest wait until it was gone back for; all had to go at the same time. A larger locomotive meant increasing the capacity of the power station and overhead lines. After studying the matter carefully, it was decided on this particular road to return to the use of the steam locomotive for the freight business, except for switching at points where the use of a steam locomotive was not practical.

In winter work it is found that the electric locomotive with the same power behind it will do as much work as steam, but when it comes to lightning and sleet, the steam locomotives have a decided advantage. For switching purposes it is often possible to use an electric locomotive where it would be impossible to use steam. In the matter of fuel the coal consumption is much less with the steam locomotive. — Railway and Locomotive Engineering.

Technical Contributions

"Taking Things for Granted."

One of the most serious faults of men of a certain disposition is to accept things at their face value, and to think that because some one of a certain degree of prominence has stated that so-and-so is the case, that it must necessarily be so. At the very best, human nature is not infallible; every one is mistaken at some time; and a wise man's statement, repeated until it is considered an axiom, may have been given out in the first place as an *approximate* fact, only, to be accepted on trust until experiment has verified or corrected the theory.

A great many of the writers of air-brake instruction have been satisfied to repeat and consolidate the opinions of those who have gone before, without originating anything or putting it to the proof, and considering anyone a heretic who could question the correctness of an air-brake *idea* that had broken out in type.

For years the Westinghouse instruction books recommended the use of mineral oil as a proper lubricant for the air cylinder of the air pump, and, after their instruction book of 1902 had given a list of recommended lubricants for the different air-brake parts, in which valve oil was mentioned for use in *both* cylinders of the air pump, some air-brake writers continued to recommend West Virginia, 32° well oil as proper to use in the air cylinder of the pump.

I have heard many enginemen ask what was meant by 32° West Virginia well oil; they were not sure that the company furnished it. All of these black engine and car oils are mineral or "well oils," because obtained from oil wells in the earth, and the oil from West Virginia wells of certain degrees of refinement are the standard. These oils may be further refined until they assume the light golden color of high-grade machine oil.

But no grade of mineral oil should be used on hot surfaces or bearings, as it evaporates and produces greater heat. Neither should vegetable oils be used, as they harden and gum. Animal oils only can be used successfully with great heat, and tallow was for years employed for such purposes until the modern "valve oil" was introduced.

The general lubricating principle of valve oil is the oxide of lead that it contains, which is in solution with a fine grade of oil that shows a high "flash" or explosive point. And although the oil is of value as a lubricant, the drops are fed so slowly through the lubricator glass that it is hard to understand how so little could spread over the great area of valve chest and cylinder and allow for that carried through to the exhaust.

The oil acts as a medium, or floater, to carry the oxide of lead and if the lubricator is permitted to feed a little fast while the engine is moving up to couple to the train, the walls of the cylinders get a good coating rubbed in of the lead, and a slow feed after starting the train will keep them smooth.

It seemed to be the general impression at first that as the air cylinder of the pump received free *cool* air at each stroke that the walls of that cylinder were kept comparatively cool, and that mineral oil (engine oil) should be used —sparingly—as a lubricant; but as it was realized that the compression of that cool air heated it, it was found (and from the condition of the inside of the pump) that valve oil was the only lubricant that could be used with success in either cylinder of the air pump. Graphite is good for the steam cylinder, and would also be just the thing for the air end, only for its bad effect on the air valves, causing them to stick.

It sometimes happens that after a pump governor has been overhauled at the roundhouse there is no steam to run the pump, and the inspector having loosed the tension of the regulating spring leaves it so until the engine is hot, and then forgets it. The engineer comes around and starts the air pump, which works all right at first; but with its first stroke the pressure is sent through the main reservoir directly to the governor piston—the diaphragm valve not holding it off, of course—and begins to blow from port *C* in the governor, but the significance of that blow is not apparent to the engineer. When the air pressure has increased to somewhere between 40 and 50 pounds, the pump begins to slow down—does not completely stop, but labors as though the boiler pressure was no greater than the pressure of air. Engineer turns the boiler valve wide open and tells the fireman the air pump is "all in," after he has opened one of the drain cocks on the pump and found pretty fair steam pressure. And that's taking things for granted, because he has read that that is the way to find whether the pump or governor is at fault. Finally an innocent bystander on the running-board of the engine in the next stall suggests that the air blowing from the vent port indicates a defective governor—"diagram valve is off her seat, see?"—and the engineer rushes around to find the inspector, who simply gets up and begins tightening the tension of the regulating spring—the air stops blowing, the pump starts to work, and in a few minutes has worked up the regulation pressure. By the way, that little port *C* telltales a whole lot about the governor and air pump.

One thing that is too commonly taken for granted by young runners is the correctness of the duplex air gauge. If the hands are loose on their pinions, or out of adjustment, and do not show the pressures they should in relation to each other it is a common error to look for the cause elsewhere. I knew of a newly-promoted switch engineer being "balled up," as he expressed it, because the piping to the gauges had been coupled wrong, main reservoir pressure to the black pointer and train-line to the red one. If both pointers stand at exactly the same figure, with brake valve in full release position, lone engine and tender, it *may* be taken for granted that they are both correct, but if one shows say 3 pounds more than the other, don't take it as a matter of course that one gauge is 3 pounds heavy or the other one 3 pounds light. It is *possible* that one gauge could be 10 pounds heavy and the other one 13 pounds heavy, and they would stand but 3 pounds apart in full release position of the brake valve.

An engineman who is technically well-posted, and has read and remembered all of the several air-brake instruction catechisms that are in print, is often inclined to talk and think "by the book" too much, and imagine that books are as divine guidance in all air-brake defects. An engine, newly overhauled, with an 8-inch air pump in first-class condition, was sent out to pull a light passenger train on a branch line where the enginemen have to do a lot toward keeping up their engine. After a few days' service the pump commenced to work slower on the up-stroke, and this got worse until she died with the main pistons at the bottom of the cylinders.

The trouble should have been easy for such a well-posted man to find, but everything about the pump that he had ever read about was all right, and eventually another pump was sent out to him and the defective one sent in to the shop.

Now, at the back shop the master mechanic took it for granted that the plumbing outfit knew how to pipe an engine for air without any suggestions from the air-brake gang, and a survey of the different routing from pump, through two main reservoirs to the brake valve on the different engines would make a man cross-eyed. And those tin soldiers, understanding the nice work required to make tight metallic gasket joints at the pump governor unions, just didn't make them—used soft "rainbow" packing, and made a temporarily tight and temporary job. Where such soft material is used the face of the union swivel should have a flange, or collar around its inner edge to protect the gasket, so that compression will not mash it into the steam passage. These pump governor unions, being intended to have metal (soft copper) gaskets, are plane-faced, without the flange, so the gaskets were softened up, and melted bits carried by the steam to the pump, where it was deposited in the upper, or reversing port that leads from the reversing valve to the top side of the reversing piston, thus disturbing and finally preventing the reversion of the main valves. It seems as though the obstruction would have been looked for and found when the engineer had those top cap nuts off, but it was beyond his range of reckoning.

Another case shows the efforts that some men make to overcome troubles that appear insurmountable to others: An air-braked freight train was in a sidetrack for some time, and the engineer took the opportunity to look into his slide-valve feed-vale attachment. Main reservoir pressure was up to the limit, but the train line was not supplied regularly. You know that a sort of gum collects on the three flattened surfaces of the stem of the little regulating valve where it sticks down beneath the valve seat. Well, it often prevents full feed to the train line, and while he had it out, cleaning it, little valve got away from him and fell down into the creek underneath the trestle bridge on which the engine was standing. Well, he lightened up the pump governor to carry 70 pounds all around, and as it was the local and only 20 cars of air were cut in, he had no trouble in releasing brakes when he made 10 or 15-pound reductions. After a 5-pound reduction the brakes would only release at the head end.

He couldn't beg or borrow a new regulating valve down at the other end of the division—foreman had none in stock—until Sheeny Ike, who runs the big 249 on through freight, offered to trade him the one out of his own slide-valve feed-valve in exchange for one of the local engineer's automatic air-cylinder oil cups. There was a duplex pump on the local engine with those new oil cups on both air cylinders, and Ike has an 11-inch pump, with a hand-oiling cup. It took Sheeny fifteen minutes to make the other engineer understand that an oil cup is only necessary on the low pressure cylinder of a duplex pump, and it prevents an excess of oil being carried through into the air equipment. Local man had taken it for granted as otherwise, but they made the trade.

Now, Sheeny Ike didn't take it for granted, like the other man, that he was "all in" without his regulating valve. He got some candle-wicking and split it, and, twisting up two single strands, he packed the grooves in the supply-valve piston, tying a retaining thread of fine spool cotton around each twist of packing, and, oiling it nicely, he replaced the piston and found it worked very smooth. Next, he went over to the car inspector's shack and found one of those old, heavy brass passenger triple-valve graduating springs, which he put in against the supply-valve piston, instead of its regular and lighter spring.

Sheeny started the pump, brake valve in running position, and opened the bleed-cock on the driver-brake auxiliary reservoir, in order to somewhat equal the loss from leakage when supplying a train of air. The black gauge pointer didn't start to rise until the red one was showing 28 pounds, then it followed, keeping 28 pounds shy, and when the black hand was at 70 pounds and the red one registered 98, he set the governor at the latter figure.

They had 47 cars of air coupled in to Ikey out on that trip, and he saw to it personally that all leaks in that train line were made tight, and he got home with his train with never a stuck brake. He had temporarily converted a G-6 brake-valve into a D-8. Oil cup to the good.

A class of five new freight engines was received once, with three-way cocks in the train-line pipe connections beneath the engineer's brake valves, instead of ordinary cut-out cocks, the idea being that in addition to their use as cut-out cocks they could be turned so as to exhaust train-line pressure quickly in case of running second engine when double-heading, or if the brake valve should become defective. But at the locomotive works those cocks were put in upside-down, and none of the engineers "caught on" for several months—really never. Took it for granted that they were all right and ready for an emergency. Finally one cold night one of those engines got her train out only a few miles, and was laid up in a siding for quite a while to allow other trains to pass. The engineer stretched out the best he could for a cat-nap, and his foot in some way pushed the three-way cock into a position whereby supply to train-line was cut off, and *main reservoir pressure* was blowing out very slightly.

It was a Vaughan-McKee brake valve, and its train-line exhaust port and the discharge port from the three-way cock were both behindside of the valve and close to the cab front, so that when they got ready to start and brakes were found stuck, and the engineer began investigating he took it for granted the blow was from the brake valve. Pressures showed correctly on the air gauge, but in the application positions no pressure would discharge and the blow would stop. So he imagined his brake valve was out of order. Never noticed the altered position of the three-way cock, and made the crew get out on top and brake by hand, with the thermometer at zero. At 3 o'clock a. m. he arrived at the division terminal, where the air car had arrived a few days previously, and routed out the instructor to help him "make good," as he was programmed out again at 7.30, and he thought that he had one of the strangest and most interesting brake valve disorders on record. It did interest the air man, who followed up the case on the other four engines and found the three-way cocks all wrong. The engineer was a sensible man and learned his lesson, and thereafter he made sure that those things that are only to be used occasionally were always in proper condition.

To show how things may be put wrongly, and at a roundhouse or shop where one would hardly expect foolish errors to occur, here are two or three—but of course an ambitious young apprentice, or a young engineer *without* ambition during his training days as a fireman, is likely to do some unexpected things:

Referring to a plate of the 9½-inch or 11-inch air pump it will be seen that the chamber behind the smaller main valve piston should never contain live steam or back pressure, and the plate of "main valve bushing" shows a small port extending from the chamber to the exhaust ports *f* and *d*. The copper gasket between left main valve cylinder head and that part of the top head has a small hole cut through it in register with the little relief port, and I have known of a roundhouse air inspector of several years' experience putting the gasket in turned around so that its port was on the opposite side, and the relief port from the piston chamber was blanked—closed by the solid copper. When the engine was under steam the engineer tried to start the pump, and the main piston moved slowly up to the top end of the cylinder and stayed there. It took the air inspector and the engineer and the roundhouse foreman quite a long while to locate the trouble, and there was some lengthy correspondence later on the subject of why train 44 was delayed by the power department.

Another engineer went to start his air pump before getting out of the house, and when he "broke" the throttle valve it sounded like the blower was slightly opened, and as he gave the pump more steam the blow at the stack grew louder and the pump refused to start. He tapped the pump and resorted to the usual means to get it working enough that he could get oil through both cylinders, but it was no go. He removed the reversing valve chamber cap-nut (being a well posted young fellow, if he *was* an extra runner—it was his first trip on that engine) and found the reversing valve turned one-fourth around, one side just clearing the guide pin and the other side being a quarter of an inch away from those three ports that the reversing valve should cover, one of the ports leading to the exhaust and causing the blow. It was a 9½-inch pump. Who had put the reversing valve in in that position was never found out.

An extra engineer is up against queer conditions. One of the boys was called to go out on another man's regularly assigned engine, and when he started the air pump the pressure blew out as fast as she made it, from both the service and emergency exhaust ports of the engineer's brake valve. He thought the air was all coming from the train-line exhaust elbow fitting, and, taking the brake valve apart, found the equalizing discharge piston stuck, apparently, at upstroke. He pushed it down, closing the valve, then put everything together again; but when the pump was again started the pressure blew out heavily from the "big hole"—direct application and exhaust port.

Without taking the brake valve body apart again he located the trouble by simply taking off the handle nuts. Then he remedied the wrong by just removing the handle and *putting it on right*, after turning the rotary valve to its correct position. It doesn't seem hardly possible that any one could, or would, put the brake-valve handle on the wrong way, because the square hole through it has a steel key on one side and there is a slot or keyway on the stem that turns the rotary valve in which it must fit, and prevents it from being put on wrong; but the little steel key had been lost out, and whoever did the job, instead of looking to see that the handle was so placed that both keyways would match in position, did not even try to see which way the handle would fit the easiest, and marks showed he had pounded and driven the handle onto the stem. You can't take *anything* for granted as being right until you see that it works right, and lots of the boys that are running engines at electric light and artificial ice plants at $55 per would still be "eagle-eyes" on the Air Line if they had realized that fact in time.

Quite a number of cases have come under my observation where the older type of feed-valve attachment had been taken apart and then put together leaving out the "diaphragm ring," No. 75 on the plate. Such an omission has a peculiar effect. The other day a young fellow lately set up, who was using a road engine in shifting service in the yards, had some trouble with his feed valve attachment, so it was removed and another one of the old pattern put on in its place. At the noon hour he had the air man go over to the engine and help him find out what was ailing his air equipment. He could not carry excess pressure with his brake valve in the running position—the train line gauge pointer would run up to an equalization with the red hand—and at the same time there was such a leak from the train line that when the brake valve was placed on lap the driver and tender brakes would set at once.

They inspected the train piping all around and could find no leaks. Removing the feed valve, its appearance showed that it *had been* seating, and nothing appeared wrong with it. But before proceeding further they brought the air-brake instructor to the engine, and after hearing their report he placed his hand under the check nut, or bottom cap-nut of the feed valve attachment, and felt the blow of air coming from the hole in it that they had failed to hear on account of the noise from a badly leaking gauge cock. Then he took out the piston and other parts, and neither one of the boys noticed the absence of the ring until he called their attention to it. There was nothing to hold the edges of the rubber diaphragm tight; those piston rings are not given much attention, and this one leaked pretty bad. Some one had previously noticed the blow from the hole in the lower cap and had stuffed a bit of waste into it—not enough to prevent the leak from setting the brakes when the engine valve was lapped, but it allowed the pressure to collect under the piston and diaphragm, and thus resist the train-line pressure from forcing them down, which it would have to do in order to close the feed valve. It had caused a lot of trouble, but was easy enough repaired when some man came around that didn't take it for granted that the cause could be found in instruction books.

WILL W. WOOD.

* * *

What Ails the Brake Valve?

There are several ailments peculiar to the brake valve; some are dangerous; some are annoying and some are mysterious. Any leak that allows main reservoir air to mix with train-pipe or brake-valve air is dangerous, and, as main reservoir air is a good mixer, it is always looking for a chance to get outside of its bounds as fixed by the rotary and get in with the other air. Leaks into the train pipe are the most serious because they increase the train-pipe pressure, which in running position will be higher than the standard and give too high a brake power on a full application. This on a slippery track is liable to cause skidded wheels.

With gritty or gummy triples it will help some of the "kickers" to go into quick action with a service reduction. Below 20 pounds in the auxiliary and train pipe you can rarely get quick action on an ordinary train. As the pressure increases, the liability of quick action increases; any one who has handled trains with the high-speed pressure of 110 pounds can appreciate this. A leak from the main reservoir to the train pipe when on lap position is still more dangerous than when on running position, because it tends to release the brake when you want it held set, and risks a collision or a runaway. A leak into chamber *D* (which contains brake valve air) may be under the rotary valve, but it is usually past the leather body gasket which makes the joint over the equalizing piston. This leak, if from the main reservoir passage that brings air up to the top of and around the rotary, will prevent reducing the pressure in chamber *D*, so it is impossible to have the equalizing piston reduce the train-pipe pressure automatically. That means the use of the brake valve for a service reduction in the emergency position to apply the brake, which may be dangerous on a long train. If the leak across the gasket is a very serious one, air will pass down by the piston into the train pipe and release the brake on lap position; this trouble will be more marked with a short train than with a long one. Once in a great while we will find a leak from the train pipe across the leather gasket into and out of chamber *D;* this, if a bad one, will prevent the reduction of chamber *D* pressure and a service reduction of train-pipe pressure by the equalizing piston.

There is another leak past this leather gasket which is not always charged to the proper defect. With a long train the pressure in the train pipe can not be reduced through the angle fitting in the train-pipe exhaust as quickly as the pressure in chamber *D*. This leaves a much higher pressure below the piston than above it, and the piston at once rises high enough so it strikes the lower side of the gasket. If the piston makes a tight joint against this gasket the air from the train pipe can not get by it into chamber *D* and the pressure in chamber *D* can not feed up. This defect is usually charged to a defective packing ring in the piston, which has nothing to do with it. When there is sufficient difference of pressure between the train pipe and chamber *D* during a service reduction to crowd any train-pipe air past the piston there is sufficient pressure to hold the piston up solid against the leather gasket, and if air can get past the packing ring it can go no further.

When you see the black hand showing a feed up of chamber *D* air, get after the leather gasket and clean off the upper side of the equalizing piston. See that the gasket is put on with the smooth or hair side of the leather next the piston, the flesh or fuzzy side of the leather towards the rotary valve. As the gaskets come from the manufacturers they can not be put on wrong side up; homemade gaskets can be cut wrong and be put on wrong. This gasket should be smooth, pliable and of an even thickness to insure that the upper edge of the piston fits it, and that it makes a good joint around the reservoir and train-pipe passages to the part of the valve above it. If you think this gasket is defective, charge the train up to 70 pounds and have 90 pounds in the main reservoir. If the gasket is defective you will soon have more than 70 pounds in chamber *D*, and it will be more surely shown if you lap the valve, when the black hand will take a jump up. Then make a service reduction, and if you can not reduce chamber *D* pressure it is a good sign that main reservoir air is mixing in where it should not. If the black hand shows the proper pressures on running and lap positions, but can not be reduced on service position it is a pretty good sign that the train-pipe air is mixing across the gasket. If the black hand drops with the rotary on service position and feeds right up again it is likely that the train-pipe air comes over the edge of the piston and across the gasket.

A leak from the main reservoir port that leads into the feed valve, across the gasket into the train-pipe port, will allow main reservoir air to mix with the train-pipe air on *running position only*, for that is the only position in which main reservoir air can get to the feed valve. Just bear that in mind when testing for this trouble. If the pressures tend to equalize with the valve on lap, the trouble should be located away from the feed valve.

An air pump that is running hot and has been supplied freely with oil in the air end is the source of much of the trouble with the brake valve. In a hot pump the oil put in the air end is vaporized at once. This vapor passes back through the brake valve with the air and is deposited on the surface of the rotary valve and its seat, as a thick black gum, which not only makes the rotary turn very hard, but raises it up off the seat on one side so it does not wear true. Most of this gum is left on the seat between the main reservoir opening and the train-pipe opening, which is under the train-pipe cavity in the rotary. If this gummy deposit is not cleaned off regularly the rotary will soon wear down where there is no gum to keep it off the seat, and then when cleaned off it will surely leak. The feed valve also gets gummed up badly, depending on the condition of the pump and the amount of oil used in it. Wherever the main reservoir air passes through an opening or valve that reduces its pressure the black gum will soon show itself. Scraping it off when very thick is the usual remedy, although lye or strong soapsuds will dissolve it. If soda ash is used in the boiler the strong hot water will usually take off gum on short notice. Be careful in scraping it off that the valve seats are not scratched.

In the top of the brake valve is a small leather washer on top of the rotary valve key, which serves to make a tight joint around the shaft that comes out to the handle. If this gasket is not thick enough to keep the key from rubbing against the top of the case the key will turn hard. There are as many receipts for lubricating the rotary as there are air brake experts, but gum will do them all up. So keep the gum out.

The mysterious troubles with the brake valve are usually found to be due to improper connections to the duplex gauge and governor. If the black hand is piped to the train-pipe air instead of to chamber *D*, a reduction through the preliminary exhaust port will not show and you can not do good braking, for you do not know how much reduction in the brake valve air you make. If the governor is coupled to chamber *D* or train-pipe air in the 1892 valve you can not control the main reservoir pressure except on full release position. With the black hand coupled to the running position port from the underside of the valve, that is intended for the low pressure side of the duplex governor, another complication arises; it shows main reservoir pressure on running position and train-pipe pressure on lap. The complications possible for the black hand by coupling it up wrong, either through ignorance or intent, are so numerous that it is not worth while to follow them all out; just pay no attention to the gauge till you have time to make the connections properly. Most of the trick questions submitted have their foundation in improper connections at the brake valve. Some of them are on account of the duplex gauge being incorrect. Have it tested regularly.

Enlarging the preliminary exhaust bushing to make the brakes take hold better will usually put a short train into quick action on a service reduction, especially if the angle fitting has been taken out of the train-pipe exhaust opening. With a 10x12-inch brake valve reservoir, the chamber *D* pressure should reduce on a service reduction 20 pounds in from 5 to 6 seconds. If it is quicker or much slower than this, hunt up the trouble. With the 10x14½-inch brake valve reservoir the reduction will be some slower than with the 10x12-inch reservoir; for that reason the larger reservoir is preferred for high pressures.

With a long train it is absolutely necessary to have excess pressure in the main reservoir to move all the triples to exhaust position promptly and release the brakes, but this excess pressure is only used just at the moment of release. Therefore, if the brake valve and the pump governor are so connected that a moderate excess is carried when running along between brake applications and the pump gets a chance to hurry up the air pressure at the time of the train-pipe reduction just before a release, it will help out both the brake valve and pump. It helps the brake valve because it does not have to maintain so high a difference in the pressures in running position, and helps the pump because it pumps against the high excess needed only during an application of the brakes.

JOHN W. TROY.

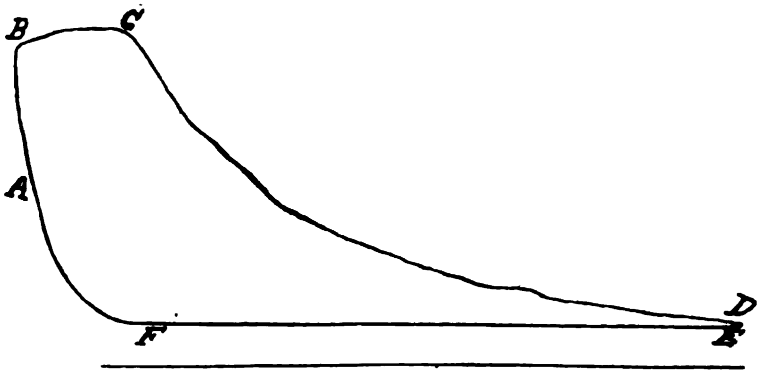
* * *

Value of the Indicator.

I would like to preface this subject with a few words to the members of the B. of L. F., nearly all of whom are ambitious to move up a little in their line of business. We know by experience that we grow by the obstacles we overcome, that is why our greatest men have been those who were not blessed with an abundance of wealth.

There never was a time when the demand for men who can do things was so great, and there never was a time when opportunities for gaining knowledge to assist one in every field of human endeavor were so abundant. Truly in these days when the facilities for securing such information are so extensive no one can claim a corner on knowledge.

The most indispensable instrument in the equipment of a first-class engineer is an indicator, and the day is not far distant when engineers and firemen will appreciate the importance of a knowledge of this valuable little instrument which informs them just what is taking place in the cylinders of their engines.



Indicator Card

Some years ago when the writer was in railroad engine service there was received at one division two large passenger engines built by a certain eastern company. The engines were exactly of the same pattern, and as one of the employes remarked, "as near alike as two peas." Later the experience of the men in handling these handsome machines revealed the fact that they were alike only in appearance; that while one was quick to start a train and get up to speed, the other was, in the language of one of the engineers, "laggy and slow." No doubt the valves of both engines were set carefully and as accurately as possible by measurement, yet one engine seemed to be chronically afflicted with that "tired feeling." No provision was ever made for the application of an indicator, and it is the writer's opinion, based on years of experience and practice with this instrument, that a few cards taken under different conditions would have revealed the fault and enabled the engineer to have such changes made as would have placed the defective engine on an equal footing with her much-prized mate. A little careful study of the functions of the indicator soon convinces the student of its simplicity, and when its first principles are mastered encourages him to further efforts, and then he finds out there is nothing about it mysterious or hard to understand.

In order that we may read the diagram it will be necessary for us to go over the lines scribed by the pencil. The card shown herewith was taken from the high-pressure cylinder of a 1,500 horsepower cross-compound engine.

The line from *A* to *B* is the admission line, and from *B* to *C* is the steam line. At *C* the valve closes the port and cut-off takes place and the pressure falls, and as the piston is now being moved by the force of the expanding steam, we call the curved line from *C* to *D* the expansion line. At *D* the release or exhaust takes place and the pressure falls still lower, and the position of the atmospheric line will enable us to know how much back pressure we have to contend with or, in other words, it shows what effect the friction of the exhaust pipe and passages is in addition to the unavoidable back pressure due to the atmosphere.

By laying a scale on the diagram referred to, we find the distance from the steam line to the atmospheric line or, in this case, back pressure line (as the high-pressure cylinder exhausts into a receiver) is 7/8 of an inch. As the card was taken with a 60 spring, it is obvious we can find both pressure and back pressure at all points of the stroke.

The line from *E* to *F* is the exhaust line. It will be noticed the distance from this line to the back pressure line is nearly 1/4 inch, which, multiplied by 60, the scale spring shows 15 pounds, which was the receiver pressure.

The line from *F* to *A* is the compression line. In all high speed engines it has been found expedient to have the valve close the exhaust a little before the piston reaches the end of the stroke, thereby trapping a portion of the steam which has just been used and causing the pressure to rise until the compression line reaches the admission line, and the same cycle of operation is repeated.

In our next article we will take up the subject of steam distribution and defects revealed by indicator. JOHN BURNS.

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Questions and Answers on the Pyle National Electric Headlight

By J. Will Johnson

Question 57.—If governor is set so that the plungers are seated when the governor weights are drawn at right angle position to face of turbine wheel, will it become necessary to change them again; and why?

Answer.—The action and position of the governor plungers are determined by the position of the governor weights, the latter's position being determined by the speed at which the turbine wheel revolves. If the plungers are set so that they are carried to seat of steam supply when weights are thrown to point of least resistance, it will be found when the plunger valves have worn so they must be faced off, that they will not seat when these governor weights are drawn to position stated above, and it will now be necessary to bend the ends of the cross-arm until the plungers will seat.

Q. 58.—When it is found that the governor weights will overtravel, that is, may be drawn beyond a position that is at right angle to face of turbine wheel before the plunger valves may be seated, in which direction must the ends of cross-arm be bent to cause plunger valves to seat firmly when governor weights are drawn to critical service position?

A.—The ends of cross-arm must be sprung out—away from the wheel—until the valves will seat firmly when weights are drawn to position stated above.

Q. 59.—How should this work be done so that both plunger valves may have the same travel?

A.—Pull governor weights until they stand straight out from face of turbine wheel, hold in this position with one hand, place rule or scale on top of governor stand, move plunger in to seat—and out, and note amount of travel shown. The ends of cross-arm must be bent back away from face of wheel half the distance of measurement shown to insure the correct travel to both plungers.

Q. 60.—How often should the governor plungers be examined to insure ideal service?

A.—The governor plungers should be examined by a competent inspector once each month.

Q. 61.—Should a record be kept of such inspection?

A.—Yes.

Q. 62.—When the governor has been properly set, how long will this device run before the plunger valves may need facing?

A.—At least six months.

Q. 63.—Why then is it necessary to remove the engine cap and examine these plunger valves once each month?

A.—This governor being of the centrifugal form is set so that it will act at the maximum speed it is desired this engine shall attain, which is at point of maximum output of dynamo desired. Oftentimes the locomotive boiler may foam, or the engineer get a little too much water in boiler, some of this water is sure to pass through the turbine engine and would have a tendency to cause the plunger valves to stick. If they should stick open, the copper electrode and holder might be destroyed, hence the necessity of the monthly inspection.

Q. 64.—Is it not possible to ascertain whether the plunger valves are stuck or not without removing the engine cap?

A.—No, not in all cases, though if one of the valves is stuck "wide open," or "entirely shut," it can be determined by taking the speed with the load on, then with turbine running without the load.

Q. 65.—If one of the plungers is stuck "shut," how can it be determined by the speed recorder?

A.—If the governor has been handling the load, that is, if the latter has been set on a wide-open throttle, when one plunger is stuck shut, the speed will be very low with light burning, but when load is taken off speed will go up to usual maximum speed.

Q. 66.—How may it be known if plunger should stick "open?"

A.—Should the governor plunger stick open, the copper electrode will be fused almost instantly, and when the load is taken off the speed of turbine will become very great. A constant and heavy flow of steam out of the exhaust pipe can also be noted.

Q. 67.—What lubricates the center-piece and face of cross-arm?

A.—The "graphite" ring.

Q. 68.—Describe this ring and its location.

A.—The ring known as the graphite ring is a flat bronze ring that is drilled full of holes and these holes are filled with graphite. This ring is held in a small recess in the centerpiece by the cross-arm.

Q. 69.—How often do these rings have to be renewed?

A.—There is no actual time limit to the life and wear of these rings. They wear indefinitely.

Q. 70.—How can the speed of the turbine and dynamo be increased when all ports are normal?

A.—The speed of this device can be increased by moving all of the governor spring adjusting screws to the right.

Q. 71.—How may the speed be reduced?

A.—By moving all governor spring adjusting screws to the left.

Q. 72.—To increase the speed of dynamo 100 revolutions per minute, how far should the screws be turned?

A.—To increase speed of dynamo 100 revolutions per minute, all of the adjusting screws must be moved one-half turn to the right.

Q. 73.—To decrease speed?

A.—One-half turn to the left.

Q. 74.—Is there any reason why the adjustment of the governor spring screws will not cause the engine to respond to the speed desired at all times?

A.—Yes, there are several things that will, at certain times, prevent the regulating of speed by movement of the adjusting screws.

Q. 75.—Give one cause that will interfere with this regulating of speed with adjusting screws.

A.—When bushing in engine cap becomes worn from lack of lubrication. It will also be found that the edge of the bottom governor stand has been worn off by the turbine wheel, which has slowly dropped down by this bushing wear until it came in contact with the governor stand. In a short time the space between the governor stands and turbine wheel will be increased until the steam will not have to pass through the turbine wheel to gain the atmosphere, but can pass around on either side of wheel to the exhaust. In this case adjustment of regulating screws could not be effective.

Q. 76.—Is there another cause why adjustment of regulating screws will not be effective?

A.—Yes. If the bearings are not properly lubricated and the end thrust maintained too close. Since the steam is directed against the buckets of the wheel by the governor stands, the latter suspended to the main casting; in a short time the flange of bushings and the cast-iron washer in engine will be worn so badly that the turbine wheel will be carried out and away from the main casting and governor stand, when now a considerable amount of steam will pass around to back side of turbine wheel to the exhaust instead of passing through wheel.

Q. 77.—Can you give another cause that might occur wherein the adjustment or the governor spring screws would not be effective?

A.—If one of the plunger valves should stick either closed or open, it would be impossible to regulate speed as desired while in such condition.

Q. 78.—What should always be done just before engine cap is removed?

A.—The end thrust should always be adjusted to 1-32 of an inch before the engine cap is removed.

Q. 79.—Why?

A.—If it is found that some changes are necessary in governor, such as changing cross-arm, etc., unless the end thrust is adjusted *before* such changes are made, there is great danger that the travel of the plunger valves might be cut off, perhaps entirely closed.

Q. 80.—How is adjustment of end thrust made?

A.—When facing the dynamo by first loosening screws in end-thrust casting, then tapping same on left side will take up end movement, and by tapping on right side will increase end movement.

Q. 81.—When it is found that the turbine wheel has been carried too far away from the governor stands (due to end thrust movement), to direct the steam against the center of the bucket in wheel, what is the cure?

A.—It will require a new bushing in engine cap and a new cast-iron washer.

Q. 82.—If there are no new parts at hand to make repairs what may be done?

A.—If no new parts are at hand temporary repairs can be made in this way: First loosen screws in end-thrust casting and move the latter to the right, then move the wheel in towards the main casting as far as it will go; now place a metallic washer of some kind between the flange of bushing in engine cap and the cast-iron washer, being careful that this washer is only of sufficient thickness to take up the lost motion between the flange of bushing and cast-iron washer.

Q. 83.—If in making such repairs you should get this temporary washer too thick, what would be the result?

A.—It would not be possible to get the engine cap on again.

Q. 84.—Is it now quite clear to you that changing the tension of the regulating springs will not always influence the speed of the turbine and dynamo to any marked degree?

A.—It is.

Q. 85.—Where is the centrifugal brake applied?

A.—The centrifugal brake is placed on the back side of the turbine wheel.

Q. 86.—How is this brake adjusted?

A.—To adjust centrifugal brake, remove the armature, engine cap and governor, pull out wheel and shaft, when you will have free access to the brake.

Q. 87.—How can you adjust brake to act at a lower speed than where it may be set to act?

A.—By turning all of the adjusting nuts to the left.

Q. 88.—To act at a higher speed?

A.—Turn all adjusting nuts to the right.

Q. 89.—To change the adjusting nuts on centrifugal brake one-half turn either to right or left changes the point at where brake will act how much?

A.—One-half turn of all nuts will change speed at which brake will act 150 revolutions per minute.

Q. 90.—If correct travel of governor plungers are maintained, will it often be found necessary to readjust the brake?

A.—No, seldom, if ever.

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Questions and Answers on Combustion

By W. L. French

Question 1.—What is combustion, or burning?

Answer.—It is the union of that element of the air known as oxygen with the hydrogen and carbon of the coal, this union forming a gas.

Q. 2.—What are the elements of fire, as considered in locomotive practice?

A.—Quality of fuel, composition, distribution and application of air through the burning fuel to produce the greatest possible degree of heat with the smallest possible consumption of fuel.

Q. 3.—Is there such a thing as perfect combustion?

A.—No.

Q. 4.—What is perfect combustion from a theoretical standpoint?

A.—It is combustion that supplies just the required number of heat units to furnish a given amount of steam at all times to perform the required work without a fuel waste.

Q. 5.—Why can it not be attained?

A.—The manner of supplying the fuel to the fire at irregular intervals and in varying quantities; the loss that is continually taking place from imperfect combustion, which will be spoken of later: the variation of grades, load and speed, with consequent variation in cut-off and fuel consumption. While a heavy train means more money earned than a light one to off-set the increased fuel consumption a higher rate of speed increases the amount of coal consumed without any increase in the earnings; so that it is evident from an economical standpoint fast trains are not a success. For these reasons perfect combustion is impossible in locomotive practice, and is not attained with stationary boilers where the engine load and speed is not variable.

Q. 6.—What is meant by the term heat unit?

A.—The amount of heat necessary to raise one pound of water one degree (Fahrenheit).

Q. 7.—What is its equivalent mechanically expressed?

A.—The power exerted to raise 772 pounds one foot high.

Q. 8.—How many heat units does a pound of coal burned represent?

A.—It varies with the quality of coal burned, but about 14,000 may be considered a fair average with the different grades of coal. With an excellent grade of coal where there was but very small loss from unburnable material it would run much higher, and with a poor grade the opposite condition would prevail in a similar degree. A good grade of coal that cost much more than a poor one is often the cheaper when the relative amount of heat units in the two are considered.

Q. 9.—What is the amount of water evaporated for each pound of coal consumed?

A.—Seven to eight pounds of water to

one pound of bituminous coal burned; about one pound less water is evaporated per pound of anthracite coal.

Q. 10.—What are the two most important elements in the production of combustion?

A.—The carbon of the fuel and the oxygen of the air. These two elements have a strong natural affinity for each other, which fact aids greatly in the process of combustion and producing both light and heat amid violent evolution of the gases, within the firebox.

Q. 11.—What is the composition of soft coal?

A.—About 80 per cent. carbon, 5 per cent. hydrogen, and the remainder may be classed as waste material, that is, incombustible matter.

Q. 12.—What is the amount of air required to consume one pound of soft coal?

A.—The exact amount can not be given in locomotive practice, owing to the varying conditions of the fire and the work, and the quality of the coal used, but from 12 to 18 pounds is a fair average. The rate of air admission must be proportionate to the coal consumption. Too much air, especially if admitted above the fire cools it and causes a fuel waste; too little air supplied causes imperfect combustion with a consequent fuel waste.

Q. 13.—How much space does a pound of air occupy?

A.—Thirteen cubic feet. Taking 12 pounds of air, the lowest rate of air consumption per one pound of coal, multiplied by 13 cubic feet, gives 156 cubic feet of air used for each pound of coal burned; allowing 20 pounds for a shovel of coal gives 3,120 cubic feet of air consumed for each shovel of coal burned, and on that basis 31,200 cubic feet of air for each ton burned. *The necessity of unrestricted air admission through the grates is obvious* to any one who cares to give the matter any consideration whatever.

Q. 14.—How can the amount of carbon and hydrogen in coal be determined?

A.—Only by chemical test. Therefore the comparison of coal sheets of parallel lines of road with varying grades and qualities of coal is no fair comparison in any sense of the locomotive performance.

Q. 15.—Which is the lighter gas, carbon or hydrogen?

A.—Hydrogen. It raises first and is first consumed of the gases of any given piece of coal, and a certain amount of moisture is consumed with it. The carbon is next burned, but the two burnings are so rapid as to be practically one and the same. Nothing in nature is destroyed. Its form only is changed. Coal by combustion is changed into heat and waste material; the oxygen of the air changes its form, and water is converted into a gas called steam, to be later vaporized and changed back to water by cooling. Always changed but no destruction of matter.

Q. 16.—Is oxygen necessary for combustion?

A.—Absolutely: It must also come in contact with whatever is to be burned, so that the admission of air is the important matter in combustion.

Q. 17.—What change must occur with coal before it is burned?

A.—It must be broken down, that is, the heat properties must be separated from the waste material, and heat is required to do this and by its application gas and coke are produced. Coke is known as the fixed carbon of the coal, and the waste material is designated as ash. The gas is carbon and hydrogen. The hydrogen and carbon in a ton of coal is equal, as before stated, to about 85 per cent. of the whole, or 1,700 pounds for one ton of coal.

Q. 18.—What gas is formed by the proper mixing of oxygen with the gas from the coal?

A.—Carbon dioxide. A colorless gas.

Q. 19.—What result as to loss of heat does insufficient air admission to a firebox have?

A.—A pound of carbon turned to carbon dioxide will convert 125 pounds of water into steam at a high boiler pressure, but with too small an admission of oxygen only about one-third as much water will be evaporated under similar conditions, so that the fuel waste is enormous; therefore, the restriction of the draft area by reason of bad damper arrangement or handling, or from clinkered or heavy fire are expensive matters for the railroad companies financially, and physically for the fireman who makes the steam.

Q. 20.—What three important things are to be considered as most essential in combustion?

A.—The kind and quality of the fuel to be burned; the admission or furnishing of sufficient oxygen—the supporter of burning—to the fire, and the igniting temperature of the fuel burned.

Q. 21.—What usually controls the kind and quality of coal burned?

A.—Natural availability. Often a soft coal is used that shows a poorer rate of heating power than some other coal that must be hauled from a distance. However, it will make the steam by using more of it, and its availability over the other coal makes it cheaper per 100 ton mile even with a higher consumption.

Q. 22.—What is the igniting temperature of bituminous coal?

A.—Carbon 900 degrees. The two gases united as hydrocarbons 950 to 1,250 degrees Fahrenheit. These are only approximate figures for the different grades of soft coal, the kind most commonly used in locomotive service.

Q. 23.—What part of the air is oxygen?

A.—About 1-5th part. The source of supply is unlimited, but the same is not true concerning the source of admission. To meet this demand for abundant air admission and to meet the extra demand made by the use of large locomotives various plans were tried.

Q. 24.—Explain some of these plans.

A.—At first by increasing the length of the firebox to such a degree that it was found to be impracticable for efficient firing and combustion. To give the required grate area and shorten the box to reasonable proportions the shallow firebox extending out over the frame and rear drivers; or trail wheels on some types of locomotives with high drive wheels.

Q. 25.—Has any other method of admitting air other than through the grates been tried, and with what result?

A.—Admission by hollow stay bolts and by flues running from the atmosphere through the firebox sheets above the fire, and known as combustion flues. The all-hollow stay bolt is not used as much as formerly and the combustion flues are used in a milder degree.

Q. 26.—Why are combustion flues used to a less extent than formerly?

A.—The admission of air above the fire through a number of two-inch tubes was found to be more detrimental than beneficial, on account of such large currents or air cooling the fire and sheets and tubes of the firebox. Where the grate area is deficient, air admitted in small jets above the fire would be of benefit, as it would mix readily with the gases without cooling them to such an extent as is done by combustion tubes.

Q. 27.—Why is air that has passed through the grates to the firebox preferable for the purpose of combustion?

A.—Because in passing through the fire it becomes heated and is more ready to unite with the coal gases and take its part in combustion than that which is admitted above the fire. A certain amount of air admitted above the fire can be used without noticeable loss, but the heat loss is considerable when it is admitted in such quantities as to cool the gases below the igniting temperature. All firemen know what the result of holding the firedoor open is on the fire.

Q. 28.—What regulates the openings between the grate fingers in addition to the air admission?

A.—The openings must not be so large as to allow coal to drop unburned in the ash pan. They should rock enough to shake small cinders and pieces of slate through readily.

Q. 29.—How can the necessity for the immediate burning of the gases be illustrated?

A.—As before stated, at a high temperature with plenty of oxygen admitted to the coal gases, carbon dioxide is formed with a heat value three times as great as where the supply of oxygen is reduced or the temperature is too low, and carbon monoxide is formed; they do not *wait* to be burned, but are at once carried forward through the flues and escape unobserved out of the stack to the atmosphere.

Q. 30.—Why is escaping gas from a smokestack not noticeable?

A.—Because it is colorless. Turn on a gas jet and watch if you can see the escaping gas.

Q. 31.—Will gases be burned after once they have entered the tubes?

A.—To no great extent.

Q. 32.—Why?

A.—Because of the low temperature within the tubes and the amount of heavy gas they contain. A light lowered into a well where there is a carbonic acid gas immediately dies, and so the blaze from the firebox enters the flues but a short distance and dies. That the temperature of the flues is low is demonstrated by the fact that flues seldom, if ever, leak in the smokebox end, evidence that they are not subjected to the great temperature variations that they are in the firebox end.

Q. 33.—Is a fire that gives off plenty of black smoke evidence that all the gases are being consumed and that it is the best kind for steam?

A.—No. A fire that is in good condition will always give off some black smoke when a fresh supply of coal is put on the fire, but this will only be for an instant, unless a large amount of green coal has been used. Light firing will do away with much black smoke, which is an indication of too little oxygen for the amount of coal supplied and represents unburned carbon and a loss of heat.

Q. 34.—Does black smoke represent all the heat loss that may be taking place?

A.—No. Colorless gas may be escaping at the same time unnoticed.

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Oil Cups and Oil Strainers*

To the President and Members of the Air Brake Association:

Owing to the greatly increased service required of air pumps in the service of the present day over that of a few years ago, the matter of air cylinder lubrication has become an important factor, and one that has been called to the pump users' attention by the frequency with which pumps have been returned to the shops for air cylinder troubles, due to comparatively short life of the cylinder and packing rings. Formerly the duties of an air pump were much lighter than at the present time, and comparatively good results were obtained from an occasional oiling of the air cylinder through the direct oil cup furnished with the pump for that purpose; but today, when the pump is run to its utmost capacity and for long periods, something is required in the line of an automatic device that will lubricate the air cylinders and feed a certain quantity of oil in accordance with the amount of work that the pump is performing.

While there have been a number of devices put out for this purpose we do not know that as yet one has been devised to satisfactorily meet all requirements; but, even as they are now, it is an improvement over the old method. Where efficient automatic lubrication of the air cylinder is employed, there has resulted a much greater increase of life to piston packing rings and cylinders, doing away with groaning and reducing the heating to a minimum, with a less accumulation of gum among the parts of the engineer's brake valve, and consequently better service.

As a necessary adjunct to proper lubrication of the air cylinder of the pump, is the matter of a strainer with sufficient sized openings to allow the free passage of the air. With the type of strainers in present use, the perforations are so small that the free area opening is restricted compared to air cylinder inlets, and, as the strainer becomes clogged, this area is reduced at the expense of the pump. A strainer should have ample area opening, enough so that if half of the perforations are clogged, the opening will be in excess of the inlet area to cylinder, and should be located where the air will be free from dirt as possible.

One form of strainer that is used to some extent consists of a cylinder filled with curled hair in addition to the perforated plate. The air is oiled, and, as the air passes through, the dirt is caught by the oil, allowing the air to pass to the pump pure.

On one road this device was applied to helping engines that were used in tunnel work, and it was found that in four days' time there was a collection of carbon and grit equal to a tablespoonful, while on one pump, in straight road service, there would be a collection of a teaspoonful per week, thus showing one of the prevailing existing conditions that would be much benefited by an improved form of strainer over the present type.

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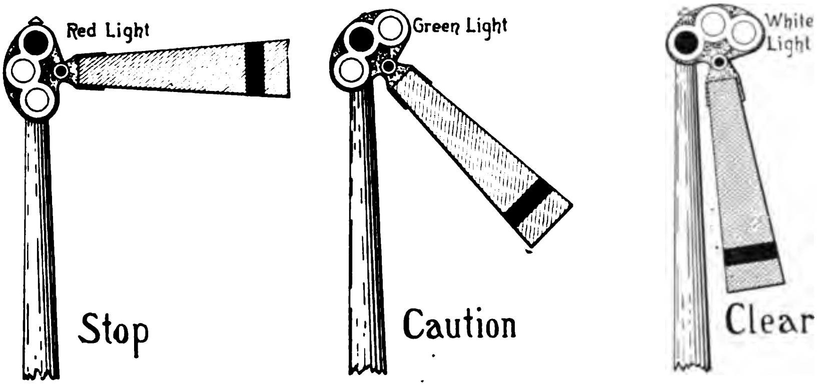
*Paper by C. H. Larimer, presented at the Twelfth Annual Convention of the Air-Brake Association, April 11, 1905.

Movement of Trains

By H. A. Dalby

The Telephone in Train Orders and Block Signaling on the Baltimore and Ohio.

For several years the managers of steam roads have been considering the use of the telephone as a means of communication in the movement of trains, not only in the transmission of train orders, but in connection with the block system. It has been used for regular train dispatching on electric lines of considerable length for a number of years, but has not been adopted to any great extent on steam roads, the greatest objection having been the possibility of mistaking certain words for others of similar sound, but the perfection attained in the construction of the telephone, aided by reasonable care on the part of those using it, would seem to overcome this objection. Besides, we have the testimony of those who have used it, as above mentioned, to the effect that it is entirely safe and practicable.



Three-Position Block Signal, Baltimore and Ohio Railroad

The Baltimore and Ohio has lately put into effect a supplement to the regular book of rules in which it provides for the use of the telephone in a very complete system of single track blocking, and also in the handling of train orders. With regard to the latter, the rules require that when orders are sent by telephone the same rules shall govern as are prescribed for transmission by telegraph, and, in addition, that each word shall be spelled letter by letter to insure correctness. Figures must be spelled out and duplicated in numerals, thus: "S-i-x-t-y-f-i-v-e, six five." One hundred and five would be lettered in the same way, followed by the words, "One naught five." It would seem that this practice, if carefully followed, would insure the correctness so necessary in transactions of this kind. As it is frequently necessary to telephone orders or instructions direct to the train, conductors and others are instructed in the manner of handling them so that a regular operator or station employe is not necessary. It has not, as might have been supposed, been the means of closing any telegraph offices or dispensing with any telegraphers, and it is said that no such action is contemplated on the above named road, all the telephones installed thus far having been in the way of additions to facilities already existing.

There is a very efficient telegraph block system on this road and on heavy single track divisions some of the sidetracks are two miles or more in length, extending on either side of the telegraph or block office. The block signal system does not alter or conflict with the regular rules for the movement of trains, it being only the means of additional safety. It is under these conditions that the telephone is a valuable aid both to the work of the dispatcher and the block system.

In a few instances telephones have been placed at sidings where there has been no telegraph office, but by far the greater number of installations have been at the extreme ends of these long passing sidings, so that communication may be had with the telegrapher and through him with the dispatcher. For block signaling purposes instructions are received direct from the telegrapher or block operator.

At a telephone station, if there is no regular building, a small booth is erected for the purpose, and the rules specify as to its construction. It must be not less than four feet square, with a window in each side. There must be a bracket lamp, a shelf on which to write, proper places for holding the required stationery, and a box in which to drop a copy of each train order received. This box is kept locked and is opened only once a week, when the orders are collected and sent to the superintendent's office. The receiver of the telephone is arranged so that it can be easily fastened to the head, leaving the hands free to use paper and pencil in receiving orders or messages. The booth is locked by a switch lock, so that it is at all times accessible to train crews.

The standard signal is a three-position semaphore, the indications being horizontal for "stop," inclined downward for "caution," and vertical (downward) for "proceed." The corresponding night signals are red, green and white, respectively. The normal position of the signal is at "stop." One of the rules requires that the lights in block offices must not be visible to an approaching train. This is for the reason that they are liable to be confused with signal lights, and this is especially dangerous on roads where white is used to indicate "proceed."

The block system is "permissive" so far as freight trains are concerned; that is, a freight train is permitted to follow another freight train into a block, the signalman holding them at least five minutes apart. This is authorized by the rules, and he need not get permission from the dispatcher. A passenger train, however, must have the exclusive use of the block. It must not be admitted if a train is already there, nor can another train of any kind follow it into the block except on the authority of a train order, or, in case of failure, of communication with the station ahead.

Provision is made in the rules for the temporary closing of a block office (as for the night) and such siding is treated as a nontelegraph station while it is thus closed. The two adjoining offices then form the limits of what is known as an "extended block." For the government of trains a block office thus closed temporarily is classed with actual "blind sidings," and the ends of long sidings where there is telephone connection, and they are called "advance sidings"; that is, they are points in advance of a regular block office where a train may stop to meet or be passed by other trains, and where, in some instances, it may be reached by telephone communication.

Long sidetracks are a necessary part of a single-track road, the longer the better. They constitute just so much double track. But the disadvantages, from the standpoint of a dispatcher, are great. A train waiting at a station for another should, if possible, be kept in touch with the dispatcher, as it frequently happens that it can be unexpectedly moved if orders can be gotten to it immediately. Where it passes the telegraph office and goes from a half to three-quarters of a mile away, with no means of communication, it might almost as well be at a blind siding. Here is where the telephone is a valuable aid to the dispatcher and also to the efficiency of the block system. Each end of the long passing tracks is equipped with a telephone, as above described, and the conductor can go there and receive orders as well as at the telegraph office. In using the block system, if a train leaves A, for instance, running toward B, and is to take the siding at the latter place, instead of waiting until the train has pulled through a mile or more of sidetrack and arrived at the telegraph office, the conductor goes to the telephone at the switch and reports to the operator that he is clear of the main track. The switch may be around a curve and out of sight from the office, but the block between A and B is reported clear. The train continues on the sidetrack, moving toward the telegraph office, and, instead of having to wait there until the block is clear between B and C it may proceed to the further end of the sidetrack, and when it is permissible for it to again enter the main track such permission may be given by telephone from the block operator at the station. By this means the length of the block is reduced to the extent of the passing track.

The regular block signals are located at the telegraph offices, and in a case as above described the train comes under the requirements of a rule that when it enters the sidetrack it must not proceed without a clearance card. The object of this provision is to prevent a clear signal given to one train being misunderstood to apply to another. It can only be meant for a train on the main track, those on sidings being required to have clearance cards. In the case before us the train in passing the signal gets a clearance card, Part (O) (which is explained later), and proceeds to the end of the siding, where it remains until permitted by telephone to resume the main track.

The clearance card on this road is peculiar. The system of blocking and of telephones makes possible at least five situations in which a clearance may be necessary, and the card is arranged to provide for each. They are intended for use by the telegrapher, block signalman or a conductor receiving orders for himself by telephone.

THE BALTIMORE & OHIO R R. CO.

CLEARANCE CARD.

——— Station, ——— 190

Conductor and Engineman.

(A) 1. I have no orders for ———

2 Orders No. ——— ——— ——— ——— ——— Have been delivered and there are no further orders for ———

3. Proceed under ——— Signal.

4. Preceding train ——— departed ——— M

5. All trains due at ——— M have arrived and departed except ———

(O) Signal is at stop for train ——— and train ——— to meet at ——— as per time table, or special order No. ———.

Proceed under ——— Signal.

(U) ——— may ——— out; block is ———

(R) Signal is inoperative. Proceed under ——— Signal.

(Y) Electric circuits have failed. Proceed under Caution signal. The preceding train was ——— Engine ——— and departed ——— M.

——— Signalman.

Only such parts of the card as apply to the case in hand need be filled out. The different parts are designated by letters and the rules indicate under what circumstances each part is to be used. Part (A) is to clear a train for which there are no orders, or after orders have been delivered to it, the rule being that whenever a train is stopped by a signal at a telegraph office it must receive a clearance card, whether the signal is changed to "clear" or not. If there are no orders the operator merely fills in line No. 1. If there are orders for the train he puts the number of each order in the spaces of line No. 2. A clearance card must accompany the delivery of all train orders and the conductor and engineer must check over the numbers to see that they get all the orders called for. Line 3 may be used to allow the train to proceed if for any reason the signal must be kept in the "stop" position. Presumably line 4 is to be used to accompany the "caution" signal, allowing a train to follow another into the block. Line 5 may be used when it is necessary or desirable for the train to receive information with regard to superior trains.

Part (O) of the clearance card is to be used in connection with what is known as the "middle order." According to the rules, when an order is sent to trains to meet, the order must be sent to the operator at the meeting point, or if the meeting point is at a nontelegraph station or a station which is closed for the night it must be sent to the operators at the stations on either side, and they must hold their signals at "stop," delivering clearance cards, Part (O) to the trains concerned. If they are to meet at a telegraph station the operator must stop the first train to arrive, or, if necessary, stop both, in order to be sure there is no misunderstanding. In this case, as in others, the train arriving first may proceed to the farther end of the siding, meet the expected train and obtain permission by telephone to proceed when the block is reported clear. Much has been said and written in recent weeks regarding the advisability of the middle order. There is no question but it takes time, both to handle the order on the wire and to give notice to the trains concerned, but it is equally certain that it adds another safeguard to the handling of trains by train orders. It is usually considered that it is not essential in connection with blocking, but it forms an integral part of this system, for the reason that a train going to the end of a long siding to meet another must receive a clearance as it passes the signal, and this clearance must show why the signal stands in the "stop" position. This part of the clearance must be used in all cases of meeting at "advance sidings," whether they be as just described, nontelegraph stations, or a block office closed for the night.

When a train is to back out of a siding the same rules are observed with regard to the block into which it is to move as though it were moving forward. For this purpose or when a train is to go forward out of the siding Part (U) is used, the second blank being filled by the word "head" or "back." If it backs out it is governed in the usual way when it goes forward passing the block signal on the main track.

Parts (R) and (Y) are for use in case of emergency, either on account of failure of the signal to work properly or inability to communicate with the adjoining block station. It should be remembered that these clearances may be obtained by the conductor over the telephone if need be and when so obtained they indicate the character of signal under which the train may proceed just as though such signal were actually displayed.

When train orders are in waiting at a station a red flag or lantern must be displayed in addition to the semaphore signal and the latter must not be moved from the stop position until the orders have been delivered.

If two trains are coupled in passing a block office they are required to remain coupled until reaching the next one and must be uncoupled only at a signal station so that the operator may know how to report them to the station ahead. There are also rules relative to a train parting and approaching a block station in that way. The engineer is required to give the "train parted" signal to the operator and the latter must use every means at his command, either by the display of signals or giving notice to adjoining offices, to preserve the safety of that train as well as others. If the signalman should notice that the train has parted he must call the attention of the trainmen to the fact, whereupon the engineman must sound the proper whistle signal and all must be governed as above.

Should an obstruction to the track be reported to the signalman he must take immediate action for the safety of trains. He is also required to observe all passing trains as to whether they are complete and in good order with markers properly displayed. In fact the rules indicate that the signalman should exercise a general watchfulness over the particular part of the road with which he is concerned and the trains that pass over it, a principle which it would seem well to make general in the case of signalmen, telegraphers and all those in similar positions.

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Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

331. Direct and Indirect Motion.—"Please publish something similar to the cut in the July number showing direct and indirect motion."—*J. M. W.*

Answer.—This is fully explained and illustrated on pages 210 and 211 of August issue of 1905.

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332. Carrying Water in Boiler.—"Why is it bad practice to carry water too high in a boiler?"—*O. L.*

Answer.—Wet steam is less effective than dry steam. When the water is too high in the boiler it is carried into the dry pipe and to the valves and cylinders when throttle is open. More water is used, more fuel consumed and the efficiency of the engine is decreased. The wet steam or water carried over into the steam chests and cylinders destroys the lubrication and increases the friction on the valves and cylinders. Keep your crown sheet wet, but use steam as dry as possible to make time or pull tonnage always.

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333. Valves Become Dry.—"When valves get dry when using steam and lubricator is working all right, what would you do to relieve conditions and how may you know that the valves are dry?"—*O. L.*

Answer.—You will know that the valves are dry when the engine begins to lag with the train by the sound of the exhaust and the rattle or pull on the reverse lever. If the lubricator is working all right it is evident that the oil is not reaching the steam chests but is held up in the oil pipe, due to the steam-chest pressure being greater than the pressure at the lubricator end of the pipe. This is called the hold-up of oil in the oil pipe. To relieve conditions, close or partly close the throttle for a revolution or two and place the lever at full stroke. If you can not shut off for this length of time partly close the throttle and drop lever into full gear This will reduce the steam-chest pressure so that the pressure in the lubricator will be the greater and the oil will be forced to the valves and cylinders. The other questions regarding the method of filling and handling lubricators are answered in the August, 1905, issue, page 165.

334. Engine or Signal Oil for Valves or Cylinders.—"Why should engine or signal oil not be used in valves or cylinders, and at what temperature does engine and valve oil lose their lubricating qualities?"—*O. L.*

Answer.—Because engine and signal oils will burn at a lower temperature and are not made for lubricating hot surfaces. When low test oils are used they burn and gum the strips on valves and rings and serve to choke the nozzle. Use the oils to lubricate the parts they were intended for. Engine oil will lubricate up to about 300 degrees, and valve oil will stand a temperature of about 500 degrees without losing its lubricating properties.

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335. Adjustment of Dope Cups.—"How do you adjust dope cups on rods, and is it usual for pins to run warmer when using dope?"—*O. L.*

Answer.—There is no adjusting on grease cups where a hard grease is used on rods, other than to slack jamb nut and screw down the plug, usually a turn or a turn and a half of the plug will force enough grease to the pin for a run of from 100 to 150 miles on main pins, and proportionately less for siderods. This should be one of the last things done before leaving a terminal. If in a heavy rain-storm the rain will wash the grease from around the collars and they may need more frequent attention. It is usual for pins to run at a little higher temperature when using grease than when using oil as the friction is greater, due to the sticky layers of grease on the pin and brass.

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336. Effect of Too Much Pressure in Grease Cups.—"What effect does too much pressure in grease cups produce?"—*O. L.*

Answer.—Pins will run warmer and grease will be forced out around collars and pins and wasted. More work for an engineer if he is required to fill the cups and increased cost of lubrication.

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337. Using Oil With Dope.—"Is it necessary to use oil with dope on crank pins?"—*O. L.*

Answer.—No, sir. Oil or water should not be used with grease.

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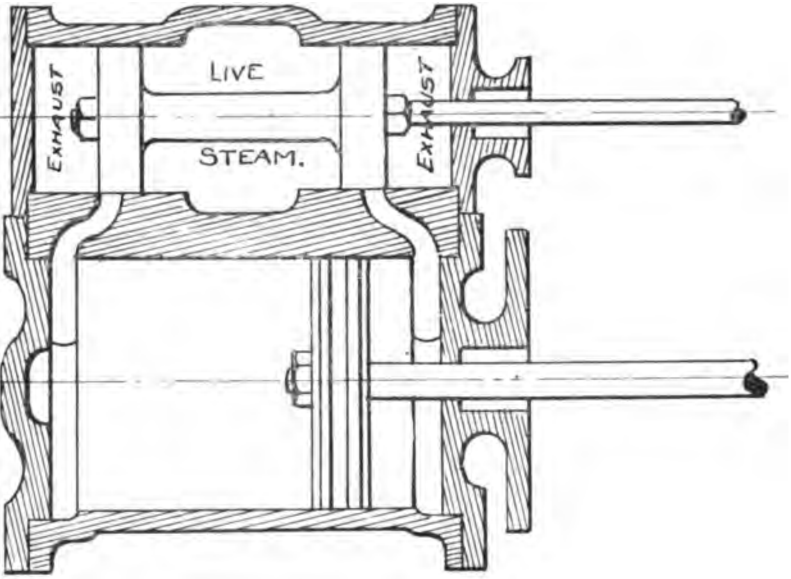
338. Lap of Valves.—"Why are locomotives given lap?"—*J. R. B.*

Answer.—To enable them to work

steam expansively. If the valve had no lap, as soon as one end was opened for admission the other end would be open for exhaust and steam would flow from the boiler into the cylinder during the entire length of stroke."

339. Inside Lap and Inside Clearance.—"What is inside lap and inside clearance?" —*J. R. B.*

Answer.—Inside lap is the amount that the inside edges of the valve overlap the inside edges of the steam ports when the valve is in the center of its seat, and its purpose is to delay the exhaust or release of steam from the cylinder.



Piston Valve with Inside Admission

340. Piston vs. Slide Valves.—"How do they differ on piston valves with inside admission from others?"—*J. R. B.*

Answer.—With a plain slide valve the two outside edges of the valve are the steam edges and the two inside edges are the exhaust edges. With a piston valve with outside admission, the edge of the packing ring represents the edge of the valve and the lead and lap are measured in the same manner as with a slide valve. In a piston valve with inside admission the lap would be the amount of valve measuring from the edge of the rings that extend over the inside edges of the steam ports when the piston valve is in the center of its seat. Exhaust lap, or what is termed inside lap, would be the amount of valve that extended over the outside edges of the steam port when the valve was in the center of its seat or in mid-position. See cut.

341. Testing for Blows in Compounds.—"How would you test for a valve blow in a Vauclain compound? How with a tandem? How for high and low pressure cylinder packing, each type, and several others, regarding compounds?"—*J. R. B.*

Answer.—The detection and location of blows in any engine is not always an easy thing to do at all times and more difficult on a compound, and mechanical officers should not expect too much from the enginemen. The illustrations and descriptions in another part of this number on the Vauclain, by Mr. W. J. McCarroll, of the Baldwin Locomotive Works, in a paper read before the Traveling Engineers' Association, and the testing of tandem compounds, by Mr. F. P. Roesch, copyrighted, and by his permission also reproduced in this issue of the Magazine, are the best information available on compounds of the above-named types.

342. Effect of Changing Driving Wheels.—"What would be the effect of changing the main pair of drivers end for end?"—*W. O. Y.*

Answer.—On American locomotives the right-side engine leads the left-side engine one-quarter of a turn, or, in other words, the crank pins are set at an angle of 90 degrees to each other, and when the right side is on forward center the left side would be on the top quarter, eccentrics set at right angles to the pins and advanced toward the pins the amount of lap and lead. If you could take the main wheels, axle and eccentrics out and turn them end for end and give them one-quarter of a turn forward, the main pins and eccentrics would be in identically the same position as before. Take a piece of cardboard about the size of a dollar and stick pins in it to represent the crank pins, mark the position of the eccentrics on the paper and then turn it end for end. The illustration will show the effect of the change—none.

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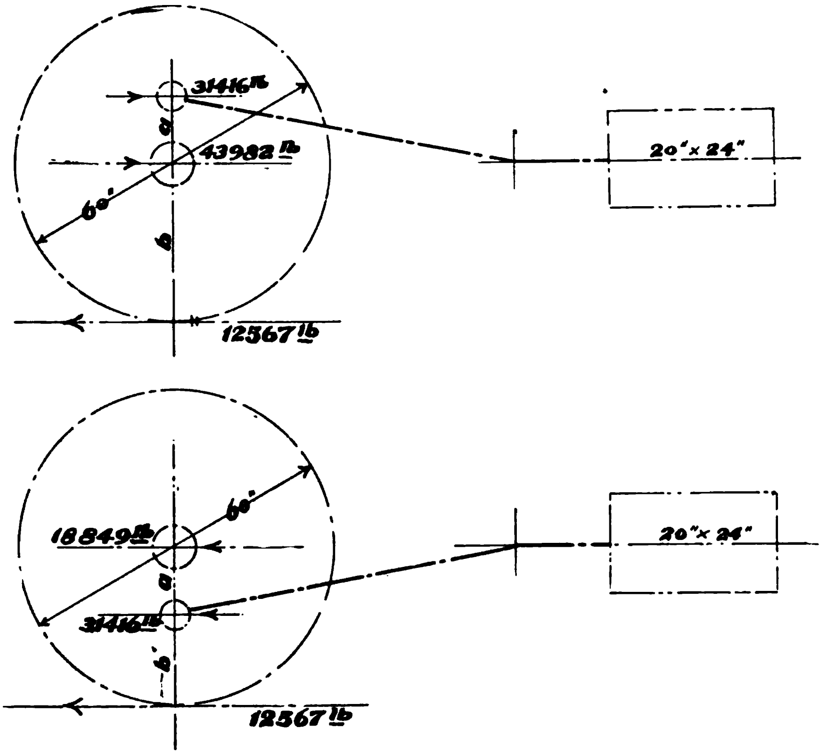
343. Stress on Pedestal Jaws.—"Is the stress on the pedestal jaws the same when the crank pin is on either quarter, the engine running ahead under steam? I think it is greater when the crank pin is on top quarter. Am I right?"—*W. O. Y.*

Answer.—Yes, sir. Suppose you had an engine with a wheel 60 inches in diameter and a cylinder 20 inches in diameter, stroke 24 inches. This would place the center of the crank pin 12 inches from the center of the axle. The area of a 20-inch piston is 314.16 square inches, and if we had 100 pounds of steam pressure in the cylinder, when the pin was on the top quarter we would have a pull of 31,416 pounds on the crank pin. Now, looking at the wheel as we would look at a lever, we have the point in contact with the rail as the fulcrum. The main axle is the load or weight to be moved and the pin is the power. This gives us a lever of the second class, in which $a=12$ inches and $b=30$ inches; power applied at

$$p = P \times \frac{(b+a)}{b} = W,$$ or the stress put on the pedestal when in this position, which is 43.982 pounds.

With the pin on the bottom quarter we have a lever of the third class; $a'=12$



Stress on Pedestal Jaws

inches and b'=18 inches; we have $\frac{P \times b'}{a' + b'} = W$, or the stress on the pedestal when crank pin is on the bottom quarter, which is 18.849 pounds when in this position. Please note illustration.

344. Horse-Power of Vauclain Compound Locomotive.—"What is the horse-power of a Vauclain compound locomotive, cylinders 19 and 32 inches by 32 inches, speed 30 miles per hour, M. E. P. 225 pounds, and wheels 57 inches in diameter?"—*W. O. Y.*

Answer.—We infer that the boiler pressure is 225 pounds, and that you may wish to use this information on other sizes. The following formula is used to find the tractive power for a Vauclain 4-cylinder compound locomotive for different speeds:

$$\frac{C^2 \times S \times \frac{2}{3}P}{D} + \frac{c^2 \times S \times \frac{1}{4}P}{D} = T.$$

C=Diameter of high pressure cylinder in inches.

c=Diameter of low pressure cylinder in inches.

S=Stroke of piston in inches.

P=Boiler pressure in pounds.

D=Diameter of driving wheels in inches.

T=Tractive power.

The tractive power multiplied by the speed in miles per hour divided by 375, gives the horse-power.

345. Slip of Link Block.—"What is the exact cause of the slip of the link block, and does it increase the travel of the valve?"—*W. O. Y.*

Answer.—The exact cause of the link slipping on the link block is due to the link block being securely fastened to the bottom of the rocker arm. Therefore, the block must move in an arc traversed by the rocker arm, and the action of the eccentric rods on the link forces it to move in a vertical motion at certain parts of the stroke, which causes the link to slip on the block. When one eccentric is traveling forward and the other backward the link must move, but the block does not, hence the slip. The longer the cut-off the greater the slip.

346. Broken Aleck Bolt on Mogul Engine.—"What should be done in case an aleck bolt broke on a mogul?"—*W. O. Y.*

Answer.—Block up between truck axle and front end of long equalizer, place a truck brass on the axle and allow the end of equalizer to rest on it. Oil the brass well, and you can get in without trouble.

The Westinghouse Air Brake.

Answers by F. B. Farmer.

239. Engine Brake Test.—"Please explain, through the columns of the Magazine how the air-brake apparatus on an engine should be tested before leaving the roundhouse?"—*O. L.*

Answer.—The test before leaving the roundhouse need not necessarily be as thorough as on arrival, lack of time usually preventing the making of any repair that can thus be avoided, but there are certain things that the engineer should never fail to ascertain. They are (1) reliable operation of the pump and the general condition of its air cylinder; (2) whether the main reservoir and tender drain cup are free from water; (3) condition of the brake valve; (4) accuracy of the air gauge; (5) regulation of train-pipe and main reservoir pressure; (6) the condition of the engine and tender brakes as regards piston travel and brake cylinder leakage; (7) and whether there is any serious train-pipe or main reservoir leakage or waste of pressure in using the sander, bell ringer or other air using devices on the engine.

Considering the other duties at this time it may seem quite difficult to test the seven features mentioned, but it is not so if done systematically, along with the other duties. One of the first duties on entering the cab should be to start the pump, slowly. By the time overclothes are on and you [illegible] ready to screw down grease cups or oil around, for the main essential is to get the testing done before coupling to the train, the pump speed may be increased. Do your other work so as to reach the pump after the governor is controlling it. Then, note whether it is running reliably, whether there is any suspicious click or pound and how fast speed is required to maintain full pressures. It should not exceed fifteen or twenty exhausts or single strokes per minute. Then, listen at the suction, but do not cover the latter, as to do so is a useless test. The suction should continue almost to the end of each stroke and there should be no blow back. If so found any excessive speed is due to main reservoir or train-pipe leakage. Find which later, unless it is noted at the pump discharge pipe connection, a very common place and easily noted at this time.

On return to the cab observe the train-pipe and main reservoir pressure shown on the gauge, then make a 20-pound service reduction, at the same time noting whether the black hand falls steadily and at the speed it should and whether the brake valve responds properly. Next, quickly note the driver brake, truck brake (if had) and tender brake piston travels; wait about three minutes and note them again so as to determine if these brakes are leaking off, such being shown by less travel or complete release. Return to the cab and, if the engine has a duplex governor, see that maximum main reservoir pressure can be obtained, shown when the pump is controlled by the governor, with the brake valve on lap. Next, place the brake valve handle in full release, observe whether the two gauge hands come together, as they will if the gauge is correct, return the handle to running position and about a minute later see if the train line pressure is about the same as when the brakes were applied, as it will be if the feed valve is not leaking.

If the pump has to run too fast to maintain the pressures in running position and its air cylinder is found to be in fairly good condition, lap the brake valve. When it is again controlled by the governor, if the speed is noticeably less the leakage is from the train pipe. Otherwise it is from the main reservoir or connections. The latter include not only the pump and main reservoir pipe, but sander, bell ringer, air signal and other air using devices, up to and including their operating valves.

The sander and, where employed, the air signaling device should be tested before coupling to the train. Use one at a time and note the increase in pump speed, which should not be more than about twenty single strokes for the first and less for the second.

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240. Terminal Brake Test.—"Please say how the brake should be tested on a freight train before leaving a terminal." —*O. L.*

Answer.—The main object sought is to insure that all available brakes are in operation, how many there are of these and about how well the train should hold. It follows that all serious train-pipe leakage must be stopped and such small repairs made to individual brakes as train safety requires and as much more as time will permit. The air brake safety of a train is dependent, so long as full pressure is had, on the number of good order brakes, the tonnage of the train, the speed and the grade. Before starting, the engineer should always know the number of tons there are per good brake, determined by dividing the trial tonnage by the number of good brakes shown by the test. The higher the tons per good brake, the steeper the descending grade and the faster the speed, the less is the air-brake safety had.

Time and insufficient inspectors are the great stumbling blocks in terminal testing. Therefore, it is important to waste no time, use none in unnecessary work and have all assistance the trainmen can give. The latter should assist in coupling and cutting in the train pipe and by getting the engine on the train as soon as possible. The engineer should do his share by having full main reservoir pressure when coupled to the train and by running the pump at the maximum speed proper while charging the train. He should also watch for signals so as to make no delay when brake application and release are wanted.

Test.—While the train is being charged it should be examined for leaks. All found should be stopped, if possible, giving attention to serious ones first. At least 50 pounds train-pipe pressure ought to be had before commencing this inspection, and full pressure is desirable; but it is better to start it immediately after cutting in the engine than to wait for more pressure and then omit stopping leaks and making the rest of the test properly as is liable to result where the responsible parties do not sufficiently appreciate the value of a thorough test. At the same time it should be seen that all brakes without apparent defects are cut in and that any plainly requiring it are cut out and carded. Also, missing cotters, often followed by rods dropping and serious damage, should be replaced.

As in the case of the first inspection for leakage, full pressure should be had before the brakes are applied, but where the necessary time will not be allowed at least 50 pounds should be had. A single reduction of 15 pounds should then be made, followed by an inspection. Brakes that do not apply or that leak off should be carded and long piston travel should be shortened.

Finally, the brakes should be released and the engineer and conductor advised of the number of good order brakes in the train. The conductor should advise the engineer of the train tonnage and total number of cars. It should be known positively that all brakes are off, hand as well as air brakes. This can be done by another inspection before starting or by the engineer pulling out slowly while someone inspects each car as it passes, but with the distinct understanding that an O. K. signal must be given and acknowledged after all are inspected before departure is permissible.

The common and serious fault where terminal tests are made, is failure to make the repairs needed or card for same. It adds unnecessary labor to each succeeding test and results in many defects going unrepaired for long periods because their presence is not known when there is time to fix them.

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241. Brake Valve Service Defects.—"I will try to explain the experience we had on one of our passenger engines recently. We had got about half way over our division of one hundred and twenty miles when the engineer, commencing a stop for coal and water, apparently made the usual reduction, but got no action on the brakes. He finally had to use the emergency position to stop. For some time after this he either had to leave the brake valve in service position to get any brake action or use the emergency position gradually. In service there was no discharge from the service exhaust fitting.

Later on the valve commenced to work as usual and gave no more trouble, I think it was caused by a leak past the equalizing piston packing ring or by the piston sticking shut. Will look for an answer in the next Magazine."—*J. M. S.*

Answer.—This is a most unusual trouble and the first of its kind the writer has ever heard of. Your first explanation is the right one, leakage past the equalizing piston packing ring. This is indicated by the piston not rising and discharging the train-pipe pressure and by the continued use of service position finally causing the brakes to apply. It had to reduce slowly as the preliminary exhaust port had to reduce the usual equalizing reservoir volume and that of the train pipe as well, aided only by whatever train-pipe leakage existed.

If this is correct an observation of the gauge at the time service position was being used, would have shown that the black hand reduced very much slower than usual. The piston packing ring was evidently worn, and when the piston closed the last time before the trouble, some grit pushed the ring away from contact with part of the cylinder wall, thus causing leakage of train-pipe pressure by it when the next reduction was made. Doubtless either the jarring of the engine or the use of emergency drove out the grit and allowed the ring to seat again.

242. Straight Air Stuck Tank Brake.—"One day while doing a little switching with an engine fitted with the combined automatic and straight-air brake, the tender brake stuck while I was using the straight air but was got off by making a service application (automatic) and release. As this soon occurred again I cut out the automatic brake valve, having little work to do.

The gauge showed 85 pounds train-pipe pressure and the engineer that runs the engine regularly said that he had just had the feed valve cleaned."—*J. M. S.*

Answer.—The tender brake stuck because of little or no excess pressure. Excess pressure is necessary with this apparatus. Without it the train-pipe and main reservoir pressures are equal. Then, the application of straight-air draws down the main reservoir pressure slightly, either taking the train-pipe pressure with it or allowing leakage to reduce it because of no feed. A train-pipe reduction so slight that it would not cause an automatic brake application will cause the triple to put enough air in the pipe between it and the double check valve to cause the latter to reverse and stick the brake when the straight-air release is attempted. That it occurred with the tender brake only indicates that the train pipe reduction was either too slight to affect the driver brake triple or the latter brake stuck, but soon leaked off.

To tell what is the cause of an excessive train pipe pressure, make a 10-pound reduction, leave the valve on lap and note the black hand, the brake valve cutout cock being left open. If the hand raises then the fault is usually a leaky rotary valve, though a defective leather gasket, between the main reservoir passageway and the cavity over the piston, is possible with the early types of the modern valve. If the hand does not rise then the feed valve is set too high, is leaking or the gasket between it and the brake valve is defective.

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The New York Air Brake.

Answers by J. P. Kelly.

151. Adjusting the New York Triplex Governor.—"When making adjustments to the triplex governor we have found that we can not make the pump pump up the pressure to more than 100 pounds before it stops, although there appears to be nothing wrong about the governor. Kindly give your explanation of how you adjust the triplex governor."—*A. C. O.*

Answer.—Confusion and failure in making satisfactory adjustments of the triplex governor probably occurs through lack of following the proper methods of adjustment when dealing with this type of governor.

When adjusting the triplex governor observe the following:

Before any pressure is accumulated in the main reservoir, place the handle of the brake valve in positive lap position, then start the pump, and adjust the main reservoir pressure top first. Screw down the regulating nut until the pump is able to pump up the desired pressure. If it is noticed that the pump does not start promptly after stopping when the main reservoir pressure reduces slightly, screw down slightly on the regulating nut sufficient to start the pump, and replace securely the cap nut, which is also the lock nut. Having adjusted the main reservoir pressure top, close the stop cock in the branch pipe leading to one of the brake-pipe pressure tops and, after moving the brake valve handle to release position, proceed to adjust the other top for the higher of the two brake-pipe pressures to be carried, observing the same method of manipulating the regulating and lock nut as used in adjusting the main reservoir pressure top.

After adjusting the higher brake-pipe pressure top, empty the brake pipe of all pressure, open the stop-cock in the branch governor pipe, and return the brake valve handle to release position, after which proceed to adjust the low-pressure top.

Screwing down on the regulating nut will increase the pressure, and unscrewing it will decrease the pressures which can be carried.

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152. **Sand in Pump Governor.**—"Some time ago, shortly after starting on a trip, we had trouble with the pump governor shutting off the pump before the standard pressure had been got in the train pipe, although the engine and air-brake equipment was brand new. Can you tell us why the pump governor acted in this manner?"—*W. O.*

Answer.—When dirt gets to the diaphragm valve of the pump governor, and lodges on the seat, air can leak down on the governor piston, and the pressure will hold the steam valve partially closed, preventing the pump from working as it should.

Considerable complaint has been made of late on account of brand new pump governors on new engines acting as you state, and investigation shows that the trouble was caused by sand, used by the locomotive builders in bending the pipes, that remained in the pipes instead of being blown out, as it should be before testing, working around into the pump governor and holding the diaphragm off its seat, thus causing the pump governor to shut off the pump. Perhaps this is what ailed your pump governor.

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Train Rules and Train Practice.

Answers by H. A. Dalby.

177. **Date of Registering.**—"In filling out the column for the date on the register should you register the date of the train (the date it was due to start on its run), the date it is due at the station or the actual date that it is there?"—*J. B.*

Answer.—We do not know of any road that provides for this matter by rule, and probably there are not many places where definite instructions are given. It is our impression that the actual date on which the train arrives or departs is the one which should show on the register. If this were the established practice (and we think it is in most places) all trains registering under one date would appear together. There need be no occasion for misunderstanding the identity of a train for its schedule is in effect only twelve hours and the register would show conclusively the date of the train at its initial point. We should be glad to receive further information in regard to this.

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178. **Work Trains Registering.**—"If a work train has orders to work between certain points and there is a register station between the limits, should the work train register if it comes into the station and goes right out again?"—*J. B.*

Answer.—The Standard Code has nothing to say about registers, but on roads where there are rules concerning them they usually require that *all* trains register arrival and departure from such stations. In the case of a work extra there may be cases where it would be of no particular use to any one and yet it might sometime involve an important question. If the rules of the individual road do not specifically require it we should say it is good practice to register each arrival and departure.

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179. **Manner of Registering.**—"No. 128 engine 1247 was delayed between stations by a broken eccentric on the engine and arrived at Falmouth, a register station, 12 hours and 10 minutes late, having flagged itself in. How should the conductor register in this case?"—*J. B.*

Answer.—Strictly speaking the train had no identity at all. It was not No. 128, for that schedule had expired; and it was not an extra, for extras can only run by the authority of a train order and there had been (presumably) no opportunity to send an order to it. There would therefore be nothing in the rules to require it to register at all. The register is often used, however, for other purposes than to fulfil train rule requirements such as to record the order in which engines and crews arrive or possibly for the information of sectionmen or others who may be expecting the train. Or, if it were a terminal station, the agent or yard master would probably depend upon the register for the time of arrival of the cars which the train handled. It would therefore be advisable to register in the usual way, leaving the number of the train blank and stating that it was the train of No. 128, giving the date of the schedule, and that it flagged in on account of being more than 12 hours late.

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180. Work Train Limits.—"Suppose we have orders to work extra between A and B, both being intermediate stations. Have we the right to use the main track at both A and B? If not, just where do our limits end? Some say the first station switch is as far as we can go, and others say we can go as far as the train order signal."—*R. F. P.*

Answer.—From the fact that when a train is given right over another to a certain station or when it is given an order to meet a superior train it must take the siding at the first switch and has no right on the main track beyond that switch, it would seem that when the limits of a work train are marked by the name of a station that the train could run to the entrance switch of the passing track and no further. Probably there is considerable laxity in this regard and if work extras have occasion to use the main track at the end of their limits they do so, but we should advise that it be done under protection of a flag. We believe that general opinion would favor the above understanding and that the train order signal would have nothing to do with it.

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181. Right Over First Section.—" 'No. 3 has right over 1st No. 2 A to C.' No. 2 is a first-class and No. 3 a second-class train. What right does this order give No. 3 over 2d No. 2 between A and C?"—*T. G.*

Answer.—Although the rules do not say so, it is accepted without question that the first section must run ahead of the second. There may have been a time when dispatchers were required to give right over a following section as well as a leading one on the technicality that the second section has the same schedule as the first, but we believe that it is now generally understood that if a train is given right over a specified section it includes the right over all following sections, inasmuch as the sections can not change positions.

One thing should be noted in this connection. Although No. 3 is given right over 1st No. 2 A to C it does not follow that they will necessarily meet at C. First No. 2 may be able to make B without encroaching on the time of No. 3, or, No. 3 may later be given an order to wait at B until a certain time for 1st No. 2. Or, cases have been known where 1st No. 2 has flagged itself by some other train to B. In an order like the one quoted No. 3 is given the right over 1st No. 2 *only*. When it meets that section the order is fulfilled and its relation to following sections is governed by the rules.

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182. The Word "Right."—"We have a rule in force as follows: 'When a train unable to proceed against the right or schedule of an opposing train is overtaken between telegraph stations by a train of the same or inferior class having right or schedule which permits it to proceed, the delayed train may, after proper consultation with the following train, precede it to the next telegraph station, where it must report.' There is a difference of opinion here as to what the word 'right' in this rule means and we would like your opinion."—*T. G.*

Answer.—The evolution in the meaning of this word in a train rule sense is interesting. Originally when it was said that a train "had a right to go" or had a right to the main track or a right to anything else it was meant that it was permitted, under the rules or by train orders to proceed or to use the main track or whatever might be implied in the statement. It became necessary, in the course of time, in order to more fully explain the meaning of some of the rules of the Standard Code, to adopt stated definitions for certain words so that when they are used we may know exactly what they mean. This word "right" was one to which a definition was applied, and the definition narrows down its meaning to an understanding much more concise than that to which we were accustomed. In speaking of the relation between two trains we used to say of one of them, "It has a right to go," or, "It has a right to hold the main track." It did not matter what was the authority by which it could do these things, the word meant that such action was permitted. But in the list of Standard Code definitions the relationship between trains is described in the definition for a "superior train" and says that it is "a train having precedence over other trains." It goes further and describes how this "precedence" may be obtained and says that "a train may be made superior to another train by right, class or direction." Further explanation tells us that "right is conferred by train order; class and direction by time-table." Equally explicit is the definition of a "train of superior right." It is "a train given precedence by train order."

Thus we have the official Standard Code meaning of the word "right" and it means just one thing: authority conferred by train order. If the authority is conferred in any other way we can not properly use the word. The distinction thus made is perfectly proper, although we had gotten so in the habit of using this word in its broad and general meaning that it may be a little inconvenient to find a word to take its place.

The object of the rule quoted in this question is to assist a train that may be delayed waiting for other trains and is beyond the reach of the dispatcher, and the words "right or schedule of an opposing train" simply mean a superior train, it being superior either by train order right or time-table provision, as has been explained. If the delayed train is overtaken by a train of the same or inferior class which has authority to proceed (either by right or time-table) it may arrange with the latter train and run ahead of it to the next open telegraph office, where it may obtain orders or proceed according to rule. The rule would mean the same if it were worded like this: "When a train unable to proceed against a superior train is overtaken between telegraph stations by a train of the same or inferior class having authority to proceed," etc.

This answer is based on the assumption that the Standard Code is in use on the road from which the question came. The rule itself is not a part of the Standard Code but it is a very useful one and should be more generally adopted.

183. Under the Same Rule.—"No. 3, a second-class train south bound, unable to make C for No. 2, north bound, first-class, is overtaken at B by a south bound extra having a meet at C with No. 2. Can No. 3 precede the extra to C?"—*T. G.*

Answer.—The rule treated in Question 182 is to be used only in emergency for the purpose of avoiding unnecessary delay It contemplates the exigency of a train being at a blind siding with no way of getting orders from the dispatcher. It is not intended to be used indiscriminately or when it may involve a delay to trains more important than the one which is being helped. In this case No. 3 could precede the extra from B to C providing the circumstances would warrant the possible delay to No. 3 at C, which should be taken into account. Whether the action should be taken would rest with the conductor and engineer of No. 3 who would be expected to decide whether the move were a wise one or not.

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184. Another Form of the Same.—"An extra south with a meet at B with No. 4, a second-class northbound train is overtaken at B by an extra having a meet at C with the same train. Can the first named extra precede the second to C?"—*T. G.*

Answer.—The questioner does not say whether B is a telegraph station, nor does he give any indication of the relative importance of the trains concerned. If B is a nontelegraph station the situation comes under the provisions of the rule previously described. Whether the circumstances warrant putting it into effect is another question and must be decided by those in charge of the first named extra.

With regard to the place where the train may be delayed, it being described in the rule as "between telegraph stations," it is probable that conductors and enginemen would not be censured for applying a somewhat liberal meaning. While it was intended to help a train out of a blind siding, yet if it were at a telegraph office which was closed for the night, or if the wire was in trouble so that orders could not be obtained, it would be a mark of good judgment rather than otherwise to take advantage of the rule to avoid prolonged delay. When this action is taken the leading train should notify trains that it may meet at the next telegraph station or before reaching there of what has been done and that the other train is following.

185. A Time-Table Question.—"Train No. 1 of the 17th, southbound, is due to leave A at 11:50 p. m. and B at 12:05 a. m. A new time-table takes effect at 12:05 a. m., the 18th, on which No. 1 is due to leave A at 12:35 a. m. and B at 12:30 a. m. Does No. 1 of the 17th die with the old time-table at 12:05 a. m. or does she hold rights until 12 hours late on the old schedule between A and B?"—*T. G.*

Answer—We assume that Standard Code Rule 4 (B) is in use or, if the rules are not standard, that the same principle is employed, viz., that of a train on the road assuming the schedule of the corresponding number on the new time-table. It should be remembered that this rule has caused more argument than all others put together and that its present form in the Standard Code, unless qualified by some provision from the outside, may, under certain circumstances, leave a loophole for two trains to assume the same schedule.

Until a short time ago it was the almost universal understanding that in a case of this kind No. 1 would follow literally the instructions of Rule 4 (B), which are these: "A train of the preceding time-table shall retain its train orders and take the schedule of the train of the same number on the new time-table." The rule seems plain that in this case the train should simply wait 45 minutes and proceed according to the new time-table. But immediately we encounter difficulties. The first sentence of Rule 4 (B) is this: "Each time-table, from the moment it takes effect, supersedes the preceding time-table." This means that at 12:05 a. m. the 18th the old time-table is entirely annulled, the new one taking its place, and the new one shows No. 1 due to leave A at 12:35 a. m. The rule would seem to authorize No. 1 to leave A on time at 12:35 a. m., and at the same time there is a train at B which is going to assume the same schedule.

Then there is the difficulty of the date of the train. It would start out as the train of the 17th and arrive at the terminal as the train of the 18th. This would be a peculiar condition, to say the least.

Recent study of the subject has led many to adopt what is known as the "date" principle, which proves to be a means of avoiding the inconsistencies above described. According to this understanding the train carries the same date from the beginning to the end of its run. It may assume the schedule of the corresponding number on the new time-table, but it must be the schedule of the *same date* that the train was using before the change. In other words, if the train starts as the train of the 17th it must continue as the train of that date. That particular train, when the new time-table takes effect, is entitled to the schedule of the 17th, and no other train can assume it. By that means it is evident that two trains can not by any means take the same schedule. In the case before us, No. 1, having started as the train of the 17th at 11:50 p. m. receives a new time-table on its arrival at B. It looks to see what time it (No. 1 of the 17th) is due at B and it finds that it was due there (supposedly) at 12:30 the morning of the 17th, almost 24 hours previous. It is therefore dead and can not move without orders. Going back to the initial point, A, If we look at the register we will see that No. 1 of the 17th has registered out and as the schedule must be filled every day (if it is a "daily" schedule) there is a train due on the 18th, therefore there is one due to leave A at 12:34 a. m. on that day, 30 minutes after the time-table takes effect.

The second explanation is, in the opinion of the writer, by far the better, but it is a question what answer would be given if you should ask your trainmaster or superintendent. Of course they are the only ones who are in a position to make a ruling.

It must be remembered that the principle of the date is neither authorized nor suggested by the Standard Code. It is an arbitrary ruling on the roads where it is used. It is fully explained in the stories of the "High Line" in the Magazine for April, May, June and September.

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Railway Club Proceedings

Water Softening for Locomotive Use.[*]

MR. TURNER: Mr. President and Gentlemen—I am not exactly in the same predicament as the worthy preacher who, when he had reached the pulpit of the church in the country where he was to preach one Sunday, found he had forgotten his notes, and wishing to square himself with his congregation whom he expected to address again on the following Sunday, said that upon that occasion he would have to depend upon the Lord, and the following Sabbath he would come better prepared.

When invited to open the discussion tonight on the subject of "Water Purification," my first thought was, what can I say that will be of interest to the greatest number.

Volumes have been written, but largely from a technical point of view and but little from the practical side; and it occurred to me that you might like to hear from that side, or from the men who have to handle the locomotives after they have been provided with softened water, how it performs upon the road and how it is handled at the engine-house, and what the actual results are from the use of treated water, when the subject is stripped of all theories, illusion and delusion.

The line with which I am connected has ten purifying plants in operation on 100 miles of track and has under consideration the construction of five more. Treated water has been used in a sufficient degree for the past eighteen months to make the observations reliable, and it is now well understood what can be expected from the investment. The water supply is taken from six different rivers, no two presenting the same analysis. The greatest trouble that has to be met is acidity, at times and places being as high as thirty-five grains to the gallon, and one-third of this being free sulphuric acid. The second disturbing elements are sulphates of lime and magnesia and the third are carbonates of lime and magnesia.

A recital of actual experiences the pleasant and unpleasant features before and after the installation of treating plants will probably be of greater interest than an array of figures showing percentages of saving, etc. Our past experience has demonstrated that we have the worst water from the first of August until about November 1st or until the heavy fall rains commence. During this period the river supply is largely made up of drainage from the coal mines, and during one particularly bad season, prior to the use of treated water, three shifting locomotives new and direct from the manufacturers were sent to one point in the acid district in June. Early in September of the same year every tube in the three locomotives was removed and scrapped, being totally unfit for further service.

Before treated water was used it was not an uncommon occurrence to find in locomotives that had worked largely in the districts where incrusting solids predominated, such an amount of mud and scale as to entirely obstruct all circulation in portions of the cylindrical part of the boiler, and there would be from fifteen to forty tubes collapsed and worthless for future use. During the latter part of each year troubles multiplied rapidly and such locomotives as were not filled up with scale and burning out, the sheets and tubes were being eaten up with acid, and failures on the road were not the exception but the rule.

Before treated water was used it was the rule to wash out boilers once for each seven to ten days of service. After the treating plants were installed, the time between washouts was gradually lengthened until under favorable conditions, where the movements of the power could be controlled and nothing but treated water provided, they were run for forty-five days between the times the washout plugs were removed. However, the materials which were used to soften the water, precipitate sludge, and neutralize the acid, caused the boilers to foam, making it necessary to change the water at intervals of above five days. This feature is easily taken care of by equipping the engine-houses with facilities for hot water boiler washing, and when properly designed the water can be blown out of the largest boilers, the boilers re-filled without dumping the fire, and the locomotive made ready for service in thirty-five minutes. The amount of scale and mud taken from a boiler that has run for forty-five days with treated water will approximate about the same amount as one run for seven days with untreated water, with this difference, that quite a percentage of the stuff removed from the boiler using treated water consists of scale which has loosened up and came down and was made before treated water was used. Corrosion of tubes and plates has become a thing of the past. The claim or statement is not made that we are entirely free from scale in our boilers; this may be so when nothing but treated water is sent to the boiler.

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[*] Discussion opened by Mr. L. H. Turner, Superintendent of Motive Power, Pittsburg and Lake Erie Railroad.

The source of benefits to be derived are many, but in order to get them all your engine houses must be equipped with pipes, one to conduct the impure water from the boiler to the condensing chamber in the power-house, another containing superheated water and another for steam, at power-house pressure, or in other words, you must be able to change the water in your locomotives quickly in order to save the difference between the time required to blow-off the steam, cool down the boiler, and properly wash it out with cold water as is done at most terminals today and that required to change the water without dumping the fire This means nearly one hour per day for all locomotives upon the road, and if this time is employed in hauling trains a much larger volume of business can be moved without any increase in number of locomotives used. In addition to this saving of time the boilers are relieved of a vast amount of rapid and irregular expansion and contraction that they are now subjected to upon all roads.

Another feature is the economy found in keeping the boilers comparatively free from scale, resulting in better conditions of heat and a consequent increase in number of miles run per ton of coal, which during the year 1904 was increased 5.7 per cent., with an increased trainload of 6.5 per cent. The saving in coal alone would pay an interest of 5 per cent. on the total cost of the plant installed. The life of the fire-boxes must be increased, absence of mud means absence of burned fire-box sheets, and any man in close touch with the situation knows that more fire-boxes are burned out than are worn out.

You must not think that you can put in an occasional plant here and there and continue the old methods of boiler-washing and get the benefits. If you do, you will be disappointed. Mixing impure water in a boiler with treated water is not a good thing to do, for unless you understand what has been done, the results will lead you to believe that water purification is a delusion and a snare, as it has been an observation that where treated and untreated water are mixed in the boiler, the precipitation of sludge is much greater than where either is used alone.

Neither must you believe your engines will all stop leaking when you have pure water. Other remedies must be applied to overcome bad firing, bad pumping, rapid contraction caused by hurried boiler-washing, running engines from the ash-pit to engine-house with fire out and dampers open, and many other abuses that the locomotive is subjected to either by conditions that can not be overcome or by careless and indifferent men handling them.

The subject of water purification is receiving much merited notice; investigation and experiment in this direction may be said to be in their infancy. Much misdirected effort has been made in the way of using various boiler compounds made on the shot-gun or patent medicine principle, but without any attention being paid to the local conditions, the quality or quantity of the water in which they were to be used. Unquestionably, the disappointing results have served to retard intelligent inquiry. Each year larger locomotives are being built with a corresponding increase of water consumption and the evils from use of impure water must multiply.

Up to this time it is safe to say that large manufacturing plants have made the most progress in treating water for their power-houses; if it is possible to be successful at one point, it should be at all points. As an illustration of what can be done where nothing but treated water is used, will state that our power-house, containing water-tube boilers of fifteen hundred horse-power capacity, is using softened water, containing in its natural state three and nine-tenths pounds of scale-forming solids to each 1,000 gallons; each boiler evaporates on an average 1,000 gallons per hour. These boilers are examined once for each thirty-five days, and were they using untreated water would contain 3,200 pounds of scale material at each examination; as it is, however, they are sometimes found to be entirely clean, and then again the lower tubes may have a light film of scale which can easily be washed off. As a matter of fact we are practically delivering absolutely pure water to these boilers.

It is a matter that requires daily intelligent attention and the results that have been obtained assure us that the opportunities for economy are such as to (if understood) convince any progressive railroad manager that even though the first cost is large, the returns are so prompt and so liberal as to make it unwise to attempt to do without it.

The President: Professor C. Kershel Koyl, formerly of Johns Hopkins University, is with us this evening and we would be glad to hear from him on this subject.

Prof. Koyl: Mr. President and Gentlemen—When I received an invitation to be present this evening I was glad to notice that the subjects to be discussed were some of those to be brought before the Master Mechanics Association at its annual convention in June; for it appears to me that if the record of the Master Mechanics Association is as good in other matters as in the subject of water purification for locomotives, it is one of the few almost infallible associations of the world.

In the days when people knew almost nothing of water purification, everyone wanted to cure boiler evils by boiler compounds; but the Master Mechanics Association said "Don't cure your troubles—prevent them"; and James Boon said, as I remember reading in one of the old Master Mechanics Association reports, "The only compound fit to put into a boiler is pure water." To-day everybody recognizes the truth of that saying: and the uniform insistence of the Master Mechanics upon the theory that boiler troubles should not be cured, but should be prevented, is the force which has led, more than anything else, I think, to the present development of the art of water softening and purification.

When I was a boy my textbook on Natural Philosophy said that there were two theories as to the nature of heat—one, the phlogiston theory; the other the molecular-motion theory. As a matter of fact there were not two theories at all, for at that time the phlogiston theory had gone to its grave, and my author had been asleep. So, too, there used to be two theories as to the value of water purification for boilers; now, there is but one for persons who are awake. If the question arises whether it pays a railroad to have its hard or muddy water softened or otherwise purified before being put into locomotives, there is no discussion. There is only one thing to do, and that is to provide the money to get as nearly as possible pure water for the boilers.

Mr. Turner has told of the very great benefits which have accrued in his experience from having hard and acid feed-water made soft and fit for boiler use. His report will be borne out, I think, by the officers of any railroad in the United States who have used water-softening machines to any extent; and particularly as to the point that on a division where there are perhaps ten or twelve bad-water stations, it is not enough to put in one softening machine as a test. If a locomotive gets good water at one station and bad water at eight or ten other stations, the result will be no satisfactory test at all. The only way to make a test is to take at least a division, purify all the waters there, and test the boilers of this division against others where the water has not been purified. Then the result can be seen. There are numbers of locomotives in New England which have been run for fifteen or twenty years, I believe, without a single item of boiler repairs, simply because the water is soft and clean; whereas everbody knows that, in the West, where the water is hard or acid or muddy, tubes and sheets must be repaired and sometimes replaced every three or four months.

I calculated some time ago, from statistics I found in a report of the Master Mechanics Association, that the average extra expense per locomotive per year, in the United States—in the parts of the United States where the water is not soft and clear—is sometning like $750; about $340 due to extra fuel (calculating fuel at $2.50 per ton) about $360 due to boiler repairs, and about $50 due to extra cleaning. Based on that calculation of $750 per year per locomotive, which I am inclined to think is moderate, and taking the locomotives found in the bad-water districts as about 20,000, it makes something like $15,000,000 a year spent by the railroads unnecessarily, and simply due to the hardness or the acidity or the something else, which you may call badness of the water.

In the West they find also serious trouble and expense due to foaming. It used to be thought that foaming was produced by alkali in the water, but gradually, as investigations have been made, it has become clear that with or without alkali in the water, boilers will foam when there is suspended matter in the water. A little mud, a little precipitate left over from a water-softening machine, a little anything which produces solid particles of matter in the water, will cause foaming. I have seen, of late, a report from one road that sometimes a locomotive will foam with twenty grains per gallon of sulphate of soda in the water, and at other times will not foam with 300 grains of sulphate of soda in the water, which is pretty conclusive evidence that the foaming is not due to sulphate of soda, but to something else; and many investigations have proved, I think, that the surest way to prevent foaming is to have absolutely clear water.

In the process of water purification there are very few things to consider. The chemical processes simply take the lime and magnesia and other matter out of solution, and the mechanical processes get it out of suspension. When dissolved in water, this matter is invisible; but when taken out of solution, it fills the water with fine particles, white or colored. Then this suspended matter must, with absolute completeness, be taken out of the water, and this we call the clarifying process. That is the whole story—first, get the matter out of solution, and, second, get it out of suspension; that is, settle it or filter the water.

There are several foolish machines still on the market; but there are also on the market today some properly designed machines, the operation of which is so exact on a large scale, that water to the amount of 10,000 gallons, or 50,000 gallons, or even 200,000 gallons per hour can be treated. That is a good deal of water to run through one machine in an hour, but that quantity can be run through machines to-day, and made perfectly clear and soft and absolutely fit for boiler use.

So I have only to say again what I said before—there is, no longer, room for discussion as to the value of water-softening for boiler use, but there *is* room for a tremendous amount of preaching. The superintendents of motive power, the engineers, and the various officers of a railroad, have a great many things to think about besides the chemistry of the water used in their locomotives. Most of them know very little about the actual processes going on, or necessary, in a water softening machine. But they do know when the effect of the water in the boiler is good or bad, and they know that it costs money to buy extra fuel, to repair tubes, tubesheets, crown-sheets and water-legs, and to keep on hand extra engines ready to send out for others which have "died" on the road. Therefore it is of the greatest importance that more papers like Mr. Turner's should be compiled and read, to show that when a road is provided with proper water-softening machines there is a saving of so much per cent. in fuel, so much in repairs, so much in the life of the boiler, so much in improved train service. Altogether these savings amount yearly to almost the installation cost of the machines, and that is good enough for anybody. Up to this time these plants have been put on railroads only to the extent of say 120 at the worst places. There is bad water at more than 4,000 stations and the work has only begun. Let it go on. (Applause.)

The President: Mr. Cass L. Kennicott, of the Kennicott Water Softening Company of Chicago.

Mr. Kennicott: Mr. Chairman and Gentlemen—Mr. Turner in his able and practical paper has covered the subject in such a thorough and practical manner that there is little I can add that would bring much force to what he has told us. "The proof of the pudding is in the eating," and the results obtained upon the Pittsburgh and Lake Erie Railroad by practical water softeners are very satisfying indeed. Although many methods have been advanced for the proper handling of objectionable locomotive-boiler waters, and they sound very well in theory or on paper, or when talked theories are a good deal like watered stock—there comes a time when there has got to be a showdown and actual results and worth shown. You can exhibit analyses before and after treatment all you please. As a railroad man said to me the other day, when I see one of our locomotives when washed has but 40 pounds of soft mud, and the other, when washed shows 280 pounds of hard scale, the first using softened water, the second the same water but not softened, that is what talks to me.

It is indeed gratifying to know that the time has come when practical experience shows that water softening, even upon railroads—which by the way is a problem by itself—is an assured success.

Attention should be called to the fact that although water-softening machinery may be perfect in design, it requires careful and intelligent attention in order to get the best results. The work of the officers of the Pittsburgh and Lake Erie Railroad in carrying out this problem is very commendable. You know a piece of automatic machinery has no brains—man must furnish the brains, and the necessary intelligence has been furnished by the officers of the P. & L. E. R. R. The able article in the American Railway Journal by Mr. Campbell, of that road, shows the excellent results from a chemical standpoint by the intelligent and careful management of the softeners.

The successful use of water-softening machines is, of course, limited by the material with which you work. It is difficult to build .. first-class house of poor materials. Some waters soften better than others. All waters can not be satisfactorily softened, but even these can usually be much improved. If a water contains so much non-scale forming material that difficulty from foaming in the boiler would be experienced and this non-scale forming material is of a form which can not be removed by softening, that water can not be satisfactorily treated, at least from a foaming standpoint. Conditions can sometimes be improved. There was a time in the West when railroad men considered anything that was wet was water and they used it because they were obliged to—to get over the road. A manufacturing plant may be located upon a good water supply, upon a stream, or lake, or located in a place where wells produce good water but a railroad must get over the country. Therefore, the water conditions of a railroad are entirely different from those of a manufacturing plant.

Much can be done by an intelligent examination of the conditions of the water supply—I am speaking entirely aside from the question of softening or purifying water—much can be done by a careful examination of the source of supply. In this connection it would be well to bear in mind that because a water is clear and makes a good drinking water is no reason why it should make a good boiler water. Many of the best drinking waters are very poor boiler waters, while many waters that are not usable from a sanitary standpoint make good boiler waters.

I can not entirely agree wtih one remark of my friend, Prof. Koyl, that is, that water-softening is a simple proposition.

Water softening is not a simple proposition. It is an exceedingly complicated one. It requires intelligent, careful, painstaking investigation and the problem is often complicated. Although the Clark process, as the lime process of treating water is called, was discovered, I believe, in 1852, little was done with the matter until within the last few years, when the increased size of locomotives and the increased demand upon motive power called the attention of railroad men to the necessity of obtaining good waters.

Much of the chemistry that has been published in reference to the purification of water is incorrect—some of the ideas covering water softening are incorrect, but theoretically the processes are perfect. Such errors are unavoidable in working out any problem. We might consider water softening about 95 per cent. perfect. Water softening is at present an assured success, both in this country and in Europe, where water-softening apparatus have been used for a longer time than in this country although not brought to such perfection. Railroad men in England and on the Continent seem in some cases to be satisfied with fair results, instead of first-class results.

I thank you, gentlemen, for your attention. (Applause.)

MR. G. R. HENDERSON: I think the Club is fortunate in having this subject discussed by such an authority as Mr. Kennicott, and I am glad he has made clear the point that a softening plant is not a cure-all for boiler troubles. There are various kinds of waters that can not be softened without introducing into those waters elements which are quite as bad as the waters in their natural state. In the West, on the line of the Union Pa cific and Chicago and Northwestern roads, the waters are almost all carbonate waters, that is, they contain carbonate of lime and carbonate of magnesia. We had heard a great deal of the success of water-softening plants on the Union Pacific and went to work to figure up the waters on our line. We found many different kinds of waters containing more or less sulphate of lime and sulphate of magnesia, and from the experiments on the Southern Pacific they decided that if the water after treatment contained over 30 grains of soluble matter, it would be preferable to leave it untreated. I think it is well to make that point clear, Mr. President, and not give this industry a bad name by claiming that it is a cure-all for all boiler troubles, and then find cases that it has not cured.

MR. BENJAMIN WATSON: The Manhattan Railroad has operated its many engines for years past at the highest standard of efficiency because they have spared no care or expense in the matter of maintaining rigid inspection and repairs of their locomotives. Particular attention was paid to the boiler and fire-box, and all working parts, with the result that those now being offered for sale are equal to an additional ten-years' service, with ordinary care and repairs.

PROF. KOYL: If no one else wishes to address the meeting, I would like to say a word.

Referring to the remark of the last speaker, in regard to the engines of the Manhattan Elevated Railroad—the water furnished locomotives in the city of New York is excellent. It is the water that we drink and it contains no large amount of material of any kind. It is very good water for boilers. It is not in New York City that the water needs treatment. It is in places where the water is hard and contains from 5 to 150 grains per gallon of carbonate of lime or magnesia, or sulphate of lime or magnesia, or something of that sort.

One further remark I would like to make is, that I think the time is past when it should be said that water containing 30 grains, or even 100 grains of non-scaling material—that means sulphate of sodium, or chloride of sodium or something of that nature—I think the time is past when it should be said that those things make it impossible to soften water satisfactorily for a boiler. There was a time when the cause of boiler foaming was not known; but today it is known. I have macnines that are working all over the country supplying boilers with water. Many of these waters run as high as 200 grains, and some 300 grains, of sulphate of sodium; and there is no more sign of foaming in those boilers than there is on a mill pond.

Four years ago, in order to test the question in locomotive boilers, I took soft, clear water from one of my machines on the Rio Grande Western Railroad, filled the locomotive and two water cars with this clear water, put into the locomotive and the two cars carbonate of soda to the amount of 300 grains per gallon of water, and put the locomotive on the road. Now, if water with a little alkali in it will foam, it would seem that that water surely would foam; but while the locomotive was worked nearly to a standstill, there was no sign of foaming. It is the same wherever the water is free from solid matter.

The question was first thoroughly discussed in the Railroad Gazette of October 12th, 1900; and again in the same journal, June 13th, 1902. Then in the International Engineering Congress at St. Louis, in 1904, it was stated by one of the engineers that a stationary boiler had shown no sign of foaming when the clean water with which it was fed was loaded with sodium sulphate to the amount of 350 grains per gallon.

After this it was still contended that while stationary boilers might not foam, still locomotives surely would if the water contained as much as 30 grains per gallon of sodium sulphate, and that therefore it was useless to try to soften water which had this much alkali, or non-scale-forming material in solution. But since then a report, which I referred to before, has been made from the Pittsburgh and Lake Erie Railroad experience, that sometimes foaming occurs with only 20 grains per gallon of sodium sulphate in the water, and sometimes it does not occur with 350 grains. That alone is enough to show that sodium sulphate is not the cause of the foaming.

But, then, what is the cause? It is most important to know, for what is the use of softening sulphate waters, if they will not get a locomotive over the road? It has been proved, time and time again, that mud in a water-leg will keep the water there in such a state of foaming that the leg is burned. It has been proved, time and time again, that if any kind of scale is loosened in a boiler by the use of rain water, the boiler will foam. It has been proved, time and time again, that if a softening machine does not complete its work but leaves precipitation of small particles to place in the boiler, the water will foam. All the information we have today goes to show that when boiler water is soft *and clean* it will not foam.

The point I want to make, and have it go on record, is, that where the water is free from matter in suspension there will be no foaming with any amount of carbonate or sulphate of soda, certainly up to 300 or 400 grains per gallon.—New York Railroad Club.

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Discussion of Current Topics

The Typographical Union and Its Present Strike.

The International Typographical Union of North America stands prominently in the front ranks of labor organizations in progress and achievement. Its present membership is about 50,000. It had its origin in the national convention of journeymen printers which assembled at Stoneall's Hotel, Fulton street, New York City, on December 2, 1850, which gathering assembled under a call made by the printers' organizations in New York, Boston and Philadelphia, being represented by delegates from New York, New Jersey, Pennsylvania, Maryland and Kentucky. So well conceived and far-reaching in its aims was the plan of organization adopted at that convention that substantially the same course of action is paramount in the management of its affairs throughout the country today.

The second national convention of journeymen printers assembled in Baltimore, Md., on September 12, 1851, delegates being present from seven States. At this gathering the organization took to itself the title of the National Typographical Union and adopted a constitution. At the Albany session, in 1869, the name was changed from the National Typographical Union to that of the International Typographical Union of North America, the organization then declaring itself to possess "original and exclusive jurisdiction in all matters pertaining to the membership of the craft in the United States and British Provinces."

The constantly improving conditions of employment with which this great body of organized printers surrounded themselves are the result of a thorough condition of organization, cool, deliberate action and good business management, and it is safe to say that no united body of wage-earners has done more to advance and secure recognition for the principles of organized labor than has the International Typographical Union; nor has any organization been more severely tried or encountered greater sacrifices in the accomplishment of this end, as the business records of nearly every prominent newspaper and jobbing establishment in the country will show. In the present struggle the employers, represented by the United Typothetae of America, and the book and job compositors represented by the International Typographical Union are engaged in a contest for the establishment of an eight-hour day, and it is gratifying to note that up to the present time the Typographical Union has met with the most encouraging success.

Up to the date of going to press a total of 218 local unions have the eight-hour day or contracts guaranteeing it commencing January 1, 1906. About 3,000 men are still out in forty cities, but eight-hour contracts have been and are being signed by many employers in these forty cities, and everywhere the ranks of the Typothetae (employers' association) are being broken. The union is steadily gaining ground, and the outlook is bright for complete victory. Members everywhere are enthusiastic and confident. It will be interesting to note that the Typographical Union, while acknowledged to be the oldest in existence on the American continent, is also a pioneer in the defense of woman's rights, the following being one of the provisions of its general laws:

"Subordinate unions, foremen of offices and chapels shall make no distinction on account of sex in persons holding International traveling cards. Female compositors holding such cards are entitled to all the privileges and benefits conferred by them, and subordinate unions must recognize that fact. Subordinate unions can not refuse women admission on account of sex."

While there are in the aggregate somewhat over 1,000 ladies holding membership in the organization, it is safe to say that if the union had not made a determined fight for uniform conditions of employment for males and females, cheap female help would now be extensively used in all branches of the printing business.

To enable the reader to understand in part the situation at present confronting the printing industry of this country we give the following brief history of the events leading up to the present struggle:

It must first be explained that, while the union employes in both newspaper and book offices are amenable to and under the jurisdiction of the International Typographical Union, the employing printers are divided, the newspaper employers having an organization called the Newspaper Publishers' Association, while the book and job employers belong to what is known as the United Typothetae of America. The three bodies are national organizations, with affiliated subordinate locals.

Before the advent of the linotype, or typesetting machines, the nature of the work in the newspaper offices and in the book offices was sufficiently similar to enable the union to apply to both its general rules as to hours, etc., without discrimination, especially where the piece-work system was not in vogue. However, the introduction of the machines into newspaper offices produced radical changes, and practically separated the two branches of the printing industry, so that at this time the local unions have a separate scale for each branch. Consequently the newspaper scales are now adjusted by the locals of the Typographical Union and the Newspaper Publishers' Association, but when the book and job scale is the matter of contention the employers are represented by the Typothetae.

During the past fifty years the Typographical Union has made numerous attempts to reduce the hours of labor for the craft, and more especially has it endeavored to obtain as nearly as possible a uniformity in this particular throughout the United States and Canada, over which territory the International Typographical Union has jurisdiction. However, up to 1887 nothing had been accomplished along this line, except in a few isolated cities where the subordinate unions, favored by purely local conditions, had succeeded in securing for themselves a shorter work-day, that is, less than ten hours, which period had practically been the universal rule for a day's labor in the printing industry. In this year (1887) a concerted national movement for nine hours resulted in disaster to the Typographical Union. It was during this year that the United Typothetae (the employers' association) first made felt its influence, and, in fact, came into actual being.

The shorter work-day movements in 1891 and 1893 were seemingly failures, though in the newspaper branch the disturbance occasioned during this period by the introduction of type-setting machines enabled the unions to secure the eight-hour day for machine operators, and this has finally resulted in a practically universal eight-hour day for the entire newspaper branch.

About the year 1895 an improved type-setting machine for book and magazine work (the models in use up to that time being practically for newspaper work only) was placed upon the market, and wherever these machines were installed in the book offices the union demanded the eight-hour day for the operator. The employer, desiring an immediate profitable output from his machine, and realizing that to obtain it he must draw from the newspaper ranks the skilled eight-hour operators, quickly acceded to the demand, feeling that the increased output of his type-setting department, due to the introduction of the labor-saving machine, would compensate him for any disturbance that might arise in consequence of having eight-hour machine men work in conjunction with ten-hour hand men. Unlike the case of the newspaper machines, the book machines have had very little influence on the movement toward shorter hours, inasmuch as the book machines are but a minor factor in creating the manufactured product of the book and job offices, while in the mechanical department of a newspaper the machine men represent from 50 to 75 per cent. of the force.

The shorter work-day influence from the newspaper machine operators soon bore fruit. A continued agitation of the question resulted in a conference in 1898 at Syracuse, N. Y., between the executive committees of the two national organizations, and an agreement was reached by which in the course of two years the nine-hour day became generally established in the book and job offices. The goal, however, had not yet been reached. Eight hours for a day's work—that prize in the glorious ideal for which organized labor has been so long struggling, had not lost one iota of its fascination, and in August, 1902, at the Cincinnati convention, the executive council and first vice-president were directed to act as a committee for the purpose of devising ways and means for the establishment of a general eight-hour day for its members in book and job offices at as early a date as practicable. The committee was instructed to bring the matter before the National Typothetae, to the end that the eight-hour day might be put into operation without friction, and the subordinate unions were enjoined from making contracts extending beyond October 1, 1905, which required their members to work more than eight hours per day. The president, in his report to the convention, stated that one of the plans suggested for the carrying into effect the eight-hour day and one which appealed to the members as feasible, and also just to the employer, was that the working time be reduced fifteen minutes each year until the eight-hour day should be an accomplished fact. The Cincinnati convention also directed that local unions, in forming new scales, make an effort to secure the eight-hour day, thus launching the movement fairly and firmly.

At the Washington convention in 1903, final action was taken in setting the date for the inauguration of the eight-hour day, it being decided that the local unions be instructed to make effort on January 1, 1905, to secure its establishment according to plans deemed most expedient by such local unions in their several localities.

This action of the convention was subsequently submitted to the referendum and adopted by a majority of over fourteen thousand.

A few months later the International eight-hour committee sent to the membership at large a circular in which attention was called to the fact that a large union, San Francisco Typographical Union, No. 21, and a small union, Paducah Typographical Union, No. 134, had arranged for and enforced the eight-hour day. It pointed out that the result achieved by these two unions, and by more than eighty other typographical unions, could be brought about by every typographical union that does not at present enforce the eight-hour day in book and job rooms.

Up to this time the United Typothetae had taken little cognizance of the eight-hour movement, but at its annual convention held at St. Louis in June, 1904, it was decided to "resist any attempt on the part of the International Typographical Union to reduce the present hours of labor."

This action, together with the repeated refusal of the United Typothetae officials to confer with the International Typographical Union officials on the subject of the eight-hour day, met with a response on the part of the typographical convention at St. Louis in August of the same year, to the effect that all subordinate unions were instructed to demand the eight-hour day on January 1, 1906, unless prevented from so doing by existing contracts, and in each instance where the eight-hour day was refused the subordinate union should order its members to cease work. The convention declared its willingness to negotiate with the United Typothetae for an agreement under which the eight-hour day would become operative, and so instructed its eight-hour committee. An assessment of one-half of one per cent. on all moneys earned was levied upon the membership for the purpose of a defense fund.

The convention of the American Federation of Labor, held in San Francisco in November, 1904, took up the matter of the printers' eight-hour movement and pledged thereto its moral and financial support and provided for the appointment of a committee of five members to act with its executive council in furthering the eight-hour day for the book and job printers.

The United Typothetae now began a series of mass meetings of employing printers in different sections of the country with the hope that the unions, seeing the solid opposition presented to their movement, would modify their demands at their annual typographical convention to be held at Toronto, Canada, in August, 1905. The executive committee of the United Typothetae also changed the date for their 1905 annual convention from June to September, the meeting to be held in Niagara Falls, New York, instead of Atlantic City, New Jersey.

This action of the United Typothetae executive committee placed the date of their annual convention after that of the convention of the International Typographical Union, which was scheduled for August.

At the suggestion of the International Typographical Union officials, a meeting known as the six-city conference was held at Indianapolis April 19 and 20, 1905. The conference was composed of delegates from Chicago, Cincinnati, Detroit, St. Louis, Cleveland and Indianapolis, and its purpose was the consideration of the mutual interests as related to the eight-hour movement. It was recommended that all agreements must be presented to the executive council for approval previous to submission to employers' associations, so that nothing contained in these agreements would jeopardize the interests represented in the shorter work-day movement. The belief was expressed that the refusal of the Typothetae to participate in a conference with the International Typographical Union would cause the former to be held solely responsible for any trouble that may occur on or before January 1, 1906.

St. Louis Union No. 8 held a contract with the local Typothetae which expired June 1st. Prior to the expiration of the contract the St. Louis Union presented to the local Typothetae a new contract embodying the eight-hour feature. This was rejected by the local Typothetae and joint conferences followed. Rumor reached the International headquarters of the Typographical Union that the executive officers of No. 8 were about to sign a nine-hour contract, contrary to the law of the International Typographical Union. President Lynch immediately telegraphed the executive officers of No. 8 and the local Typothetae to the effect that any contract not embodying the eight-hour feature would be null and void and that any such action on the part of the St. Louis Union would result in the forfeiture of its charter. The nine-hour contract was signed, and President Lynch promptly revoked the charter of the St. Louis Union. No. 8, finding itself adrift, rescinded the illegal contract and, upon notification of this action, the union was immediately reinstated.

In the interim existing contracts in Chicago and Detroit expiring, the locals in those cities presented their local Typothetae organizations eight-hour contracts for signature. The employers refused to sign the eight-hour contracts and "open-shop" notices were posted. No attention was paid to these notices by the local unions until non-union printers were employed by members of the local Typothetae, whereupon the union men walked out, and the struggle is still on. A large number of independent employers in both cities have, however, signed the eight-hour contract and union printers exclusively are at work in these shops.

At the Toronto convention of the International Typographical Union held in August, President Ellis, of the United Typothetae, was invited to address the assembly, and both before and after his address was accorded an ovation by the fifteen hundred delegates present. The Toronto convention was overwhelmingly enthusiastic on the eight-hour proposition and instructed its national officers to make every effort to secure a conference with the United Typothetae officials looking toward the peaceable inauguration of the standard work-day of eight hours.

The International Typographical Union officials went to Niagara Falls the week of September 4, for the purpose of securing a conference with the executive committee of the United Typothetae, which was then and there holding its annual convention. The officers were cordially received, but not even President Lynch was invited to address the convention.

He (President Lynch) failing in his mission to secure a peaceable settlement of the eight-hour question returned to the International headquarters in Indianapolis and immediately notified all subordinate unions not having contracts running beyond January 1, 1906, to present the eight-hour contracts to the local Typothetae organizations and that wherever there was a refusal to sign, the union men should immediately cease work.

As explained elsewhere in this issue the firm of Wm. B. Burford, at whose establishment the Magazine was printed, suspended operations for the period of one week pending a settlement, at the end of which time work was resumed under the most pleasant conditions.

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Handsome Labor Day Edition.

The Labor Day edition of the Labor Journal of Rochester, N. Y., has reached the Editor's desk. It constitutes an achievement in the world of labor journalism of which its publishers may well feel proud. It is one of the many evidences which one meets with now-a-days of the great progress being made by the labor press. It contains many well written and very entertaining articles appropriate to the occasion, interspersed with interesting news items, and its large number of substantial advertisements is conclusive testimony as to its prosperity.

The Labor Day number, consisting of 20 pages, 17½ by 22 inches, comes out in a cover of highly finished book paper showing fac-similes of a very large number of union labels printed in colors and adding materially to its attractiveness, and which, judging from the expensive nature of such work, must necessarily have occasioned its publishers great expense. There is no more substantial or effective aid to the work of organized labor in any locality than a properly conducted labor paper, and in this particular are the labor organizations of Rochester, N. Y., to be congratulated upon the progressive spirit evinced by and the success attending the official organ of unionism in that city.

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Increase in Percentage of Air-Braked Cars in Freight Equipment.

That the Harrisburg wreck was attributable to the use in freight trains of an insufficient number of cars equipped with air brakes is apparently recognized by the Interstate Commerce Commission, which has "issued an order calling upon all railroads engaged in interstate commerce to furnish the following information not later than October 1, 1905:

"(1) The number of freight cars in use.

"(2) The number of freight cars equipped with air brakes.

"(3) The average percentage of air-brake cars used in freight trains, together with any instructions that have been issued respecting the use of air.

"The commission has asked for this information with a view of setting a date for a hearing on the question of increasing the minimum percentage of air-brake cars to be used in freight trains. The commission has become impressed with the danger attending the running of freight trains with an insufficient number of cars with air brakes coupled up and in use.

"The original safety appliance act required that every train should have a 'sufficient number of cars in it so equipped with power or train brakes that the engineer on the locomotive drawing such train can control its speed without requiring brakemen to use the common hand brake for that purpose.' The word 'sufficient,' as used in this act, was so indefinite as to render the air-brake provision of the law inefficient in its application, and for this reason the amended act of March 2, 1903, established a minimum of 50 per cent. of the cars in each train which were required to have their brakes operated by the engineer of the locomotive drawing the train. The amended act also provides that, 'to more fully carry into effect the objects of said act, the Interstate Commerce Commission may, from time to time, after full hearing, increase the minimum percentage of cars in any train required to be operated with power or train brakes which must have their brakes used and operated as aforesaid.'

"The evident purpose of the law is to ultimately require the use of air brakes on all cars of all freight trains, and the commission is given power to bring this about as the state of equipment seems to permit. Recent accidents, involving loss of life and property, that have occurred by reason of the 'buckling' of freight trains when emergency applications of air have been made on trains partially air-braked, have demonstrated that such trains are really not under the control of the engineer of the locomotive drawing the train as required by law; and, as the force of impact which causes this buckling is due to the presence of the unbraked cars on the rear portion of the train, it appears to the commission that the danger may be obviated by requiring a greater number of cars in trains to have their brakes operated by the engineer.

"Therefore the commission has issued the order calling upon the roads for the above information, and, shortly after the first of October, a date will be fixed for a hearing with a view to making an order increasing the minimum percentage of air brakes to be used on freight trains to as great an extent as conditions will permit."

The resolution through which this action was determined upon is as follows:

At a general session of the Interstate Commerce Commission, held at its office in Washington, D. C., on the 11th day of August, A. D. 1905.

Present: Hon, Martin A. Knapp, Chairman; Hon. Judson C. Clements, Hon. Francis M. Cockrell, Commissioners.

Whereas, By section 2 of the Act of Congress approved March 2, 1903, amending the Federal Safety Appliance Act, it is provided that "to more fully carry into effect the objects of said Act, the Interstate Commerce Commission may, from time to time, after full hearing, increase the minimum percentage of cars in any train required to be operated with power or train brakes which must have their brakes used and operated as aforesaid;" and a sufficient time appears to have elapsed since the amending act became effective to permit the carriers to provide for any necessary increase of such minimum percentage; and

Whereas, It has been brought to the attention of the commission that dangerous conditions frequently arise from the buckling of trains under emergency applications of air on trains insufficiently air-braked, and it now seems practicable to increase the aforesaid minimum percentage without serious inconvenience to the carriers; and

Whereas, The commission contemplates setting the matter of increasing the present minimum percentage for hearing with a view of issuing an order requiring an increase of the minimum percentage of air-braked cars which shall be used and operated, if such an order shall appear justified by the statements and testimony presented;

It is Ordered, That all common carriers, subject to the Safety Appliance Act, as amended, be, and they severally are hereby, required to report to the commission on or before the first day of October, 1905:

(1) The number of freight cars in use upon the line of railroad;

(2) The number of such cars equipped with air brakes; and

(3) The average percentage of air-braked cars used in trains during the six months prior to September 1, 1905, together with a statement of any instructions issued by the carrier respecting the use of air on its line.

A true copy. Edw. A. Moseley,
Secretary.

As will be observed no definite date has been fixed by the commission upon which to hold the hearing referred to, but it is thought that it will be set for a day in the early part of the present month. As the proper equipment of trains with air brakes is of the most vital importance to all trainmen, as it frequently becomes to them a matter of life and death, it is to be hoped that this hearing will result in requiring within the shortest space of time in which it can be accomplished the use of air brakes on all cars in all freight trains.

It may be that some railroad companies will consider it to their interests to discourage such an end, and that they will be represented at this hearing of the Interstate Commerce Commission for that purpose. It is a deplorable fact that in opposing the enactment or application of the Safety Appliance Law, or of any other legislation in which the interests of railroad employes are sought to be advanced, those opposed to the passage of such legislation have been able to have their contentions supported by the testimony of trainmen in actual service, and although the number of such as are willing to subordinate their own interests and that of their fellow employes to the advantages believed to be obtainable through taking the risk of making the questionable and often unsuccessful experiment of trying to secure a "pull" with their superiors in the service by such methods are extremely limited, yet with men constituting legislative committees or bodies similar to the Interstate Commerce Commission, unfamiliar as they are with the true situation, such testimony is very liable to have some influence.

Should any railroad companies oppose at this or any subsequent hearing of the Interstate Commerce Commission the proposition to increase the minimum percentage of cars in freight trains required to be operated by air brakes it is to be hoped that the various subordinate lodges representing men in railroad train service will have already taken such vigorous action in its behalf by forwarding resolutions to the secretary of the Interstate Commerce Commission and in every other way possible as to preponderantly overcome the effect of the testimony that such (if any) individuals in active railroad train service may be induced to offer against it.

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An "Order Man" for Judge.

Division No. 91 of the Order of Railroad Telegraphers, of Chicago, Ill., is officially supporting one of their members, Bro. D. C. Ramsay, for the very important position of judge of the superior court. In a circular appealing for the support of organized labor, his Division states that:

Mr. Ramsay has been a continuous member of the Order of Railroad Telegraphers for the last eighteen years; he became a member of this Order within a few weeks after its institution; he rose within the ranks to the honorable position of president of the international organization, which office he faithfully and successfully filled for several years, after which time he took up the practice of law in Chicago, in which he has ranked with the foremost of his profession, which is evidenced by his recent nomination for the office of judge of the superior court, and, last, but not least, that during all the years he has been engaged as a practicing attorney, the laboring men have always found him a true friend, to whom they could go at any time for counsel or advice, with or without money.

That Mr. Ramsay has for the last few years been a delegate from the telegraphers' organization to the convention of the American Federation of Labor, and at its last convention, which was held in Buffalo, N. Y., in May of this year, he was again elected as delegate to the A. F. of L. for the ensuing two years.

That fifteen years ago he was a member of the State legislature of Illinois and subsequently was assistant State's attorney of Cook County for four years, and that the class they represent has always supported all bona fide union men who have been nominated for office, and believe that every member of organized labor in Chicago and Cook County, regardless of the political party they are affiliated with, will be glad to take advantage of this opportunity to assist in putting one of their own men on the bench of the superior court.

The election will be held Tuesday, November 7th. It is only by the judicious use of the ballot that wage-earners can protect their rights and interests, and where men who are tried and true, particularly from their own ranks, are candidates for public offices, the matter of political affiliations is or ought to be a very secondary consideration with them in casting their votes.

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Movement to Reduce Number of Railroad Casualties.

The abstract of statistics of railways in the United States for the year ending June 30, 1904, issued by the Interstate Commerce Commission at Washington on August 14th, gives the total number of casualties to persons on the railways of the United States for the year ending June 30, 1904, as 94,201, of which 10,046 represented the number of persons killed and 84,155 the number injured. Casualties are divided amongst three general classes of railway employes, as follows: Trainmen, 2,114 killed and 29,275 injured; switch tenders, crossing tenders and watchmen, 229 killed and 2,070 injured; other employes, 1,289 killed; 35,722 injured.

The contemplation of the foregoing figures is responsible for a movement that has been started with a view to Federal investigation of the causes of railroad accidents when such accidents are accompanied by loss of life.

In an interview appearing in the Cleveland Press the secretary of the Interstate Commerce Commission, Hon. E. A. Moseley, is correctly quoted as saying that a law making such provisions ought to be enacted, and as a matter of fact the Interstate Commerce Commission has made a recommendation to this effect in its last annual report. Mr. Moseley in his interview, said that under existing conditions the Interstate Commerce Commission makes no investigations of its own, as it takes the word of railroad officials in all matters pertaining to wrecks, and files away their reports, and that as a rule ever since the passage and enforcement of the act of Congress approved March 3, 1901, requiring common carriers engaged in interstate commerce to make full reports of all accidents to the commission, statements as to responsibility for casualties can be summed up in the four words, "no one to blame," or "due to the carelessness of the victim." He states that in certain countries in Europe a government inquiry is made in the case of every important accident, that the examination is strict and the report of same is published in the greatest detail. He also states that he is not alone in his opinion that a law embracing such requirements should be enacted in this country, as such men as Slason Thompson, representing the General Managers' Association, are in favor of such legislation.

Mr. Moseley states that the Interstate Commerce Commission can furnish the machinery for the work if it be authorized, that the eighteen inspectors of safety appliances who examine railway equipment are all men who have graduated from active railway employment, and that this body would form the nucleus of a corps of investigators who would serve the purpose in every particular. He says it was a consideration of the appalling number of casualties referred to above that actuated President Roosevelt in embodying in his last annual message to Congress a recommendation looking to the enactment of the block system on every railroad in the country, and that recent wrecks but add to the determination of those furthering the movement which has for its object the enactment of the legislation referred to.

As matters stand at present, the only requirement is that the "general manager, superintendent or other proper officer of every common carrier engaged in interstate commerce by railroad do make to the Interstate Commerce Commission a monthly report under oath of all collisions and of all accidents, which report shall state the nature and causes thereof and the circumstances connected therewith. Failure to make such a report within thirty days after the end of any month is punishable by a fine not exceeding $100 for every offense and for every day during which the railroad fails to make the report after the time specified for making the same."

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Convention of the International Brotherhood of Blacksmiths and Helpers.

The Tenth Biennial Convention of the International Brotherhood of Blacksmiths and Helpers will convene at St Paul early during the present month. Mr. John Slocum, who has for fifteen years past been the head executive of the organization, will, it is reported, be opposed for re-election, conspicuous among other candidates being one connected with the organization in the capacity of organizer. Mr. Slocum's record is such and his services in the past so valuable that his friends have no fear as to his reelection.

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New State Legislative Board of Pennsylvania.

The report of the first meeting of the New State Legislative Board of the Railroad Employes of Pennsylvania, prepared in pamphlet form, has reached the Magazine office. The meeting, which was composed of representatives from the railroad Brotherhoods and Orders, was well attended, and from the proceedings it is apparent that the boys of the Keystone State are on the alert and fully alive to the great importance of taking active and vigorous steps in the protection and advancement of their legislative interests.

The principal questions considered and those upon which it was decided that special attention should be bestowed were: "The fellow servant doctrine," "The limitation of the employment of engineers to those duly qulified by practical experience to occupy that position," and "The prohibition of the employment of county coroners by railroad companies (both steam and electric), and telegraph and telephone companies as well."

Relative to the fellow servant doctrine, let it be said that the railroad men of the North American continent should work unceasingly until that outrageously unjust principle and the vast array of one-sided interpretations and decisions which have sprung from it, and which are all morally wrong and all against the employe, having been tried at the nation's bar of equity, will have been substituted by fair and impartial legislation, and the vast number of precedents through which railroad employes and their families either suffer or are liable to suffer such shameful wrongs shall have crumbled under the weight of twentieth century civilization. It is to be hoped that such legislation enacted to take the place of the present fellow servant code of jurisprudence in Pennsylvania may yet serve as a monument to the efforts of the New State Legislative Board of the railroad men of that State.

It appears that certain employment agencies and educational institutions are undertaking to supply to railroad companies locomotive engineers who have had no experience as locomotive firemen, nor in fact, in active train service in any capacity. While no practical railroad official would countenance such methods, either from a business standpoint or one of fairness to their firemen, there are some theorists who no doubt consider the plan feasible and for reasons apart from a direct consideration of the "good of the service" regard it as advantageous. State law should provide everywhere that no man with less practical experience as a locomotive fireman than is necessary to absolutely qualify him in every particular for the proper performance of the duties of locomotive engineer be permitted to fill that position. The standard in some States where such a law already exists is three years.

The employment of coroners either temporarily or permanently in any capacity by transportation and other companies employing large numbers of men in dangerous occupations is so clearly reprehensible as to obviate the necessity for detailed explanation or criticism. Common decency demands that where such a practice is in vogue it should be immediately discontinued. Coroners should be as free and uninfluenced in the performance of their duties as judges are supposed to be, and it were much better that the office of coroner were abolished altogether than thus so grossly subsidized. That the New Legislative Board of Pennsylvania is deeply in earnest in the performance of the duties assigned it by the respective Railroad Brotherhoods and orders of that State is plainly evident from the character of its report and the familiarity displayed by its members with the various details of their work.

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Convention of the American Federation of Labor.

The twenty-fifth annual convention of the American Federation of Labor will be held at Old City Hall, in the City of Pittsburg, Pa., beginning at 10 o'clock a. m., Monday, November 13, 1905, and continuing in session from day to day until the business of the convention is completed.

Arrangements have been made with the railroads for a special rate of one and one-third fare for the round trip from all points to Pittsburg and return. Accommodations have also been arranged for at a number of hotels, the rates ranging from $1 to $5 per day on the European plan, and from $1.50 to $5 per day on the American plan. The headquarters of the Executive Council will be at the Colonial Hotel. Delegates are expected to notify the chairman of the Arrangements Committee, Uriah Bellingham, 426 Diamond street., Pittsburg, Pa., stating time of their contemplated arrival at Pittsburg and over which road they will travel.

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The Philosophy of Strikes.

No economic feature of modern civilzation has engrossed the attention of the public mind quite so much as that of strikes. The average man is usually disposed to attribute the actions of other men to selfish motives, if not worse; for the only way we know of judging others is to apply our own standard of conduct to theirs. In short, men are naturally inclined to look at the dark side of things, and for that reason the undeniable evils of strikes have been unduly dwelt upon, with the result that they have been very much exaggerated. Indeed, there are many honest old souls who are firmly convinced that strikes are direct manifestations of the power on earth of Beelzebub. Even those who know better get busy during the progress of all great strikes knocking whatever argument may be advanced in their justification. The current objections to strikes are so well known, however, that it would be sheer waste of time to further advert to them here; so let us, instead, turn our attention to the more pleasing task of analyzing their good points.

In order to arrive at a fairly correct estimate of the value of the net results from strikes to the country at large it will be necessary, of course, to deal with the subject in its entirety, and leave out from the computation all inferences and speculations based solely upon individual successes or failures. In the first place, then, it must be evident, even to a casual observer, that the most noteworthy thing about strikes is their general tendency to create and maintain a high level of wages. When employers of labor know for certain that any attempt on their part to materially reduce the wages of their employes will result in strikes, they will exercise great caution in the matter, for invested capital is proverbially timid. The strike, by indirectly conserving a generally high level of wages, is thus actually a promoter of prosperity, because the working classes are by long odds the greatest consumers of both manufactured and agricultural produce. The millionaires and leisure class, regarded in general as consumers, are hardly worth considering in this connection, they forming only an insignificant portion of the total population. As an economic factor in the equitable distribution of a nation's wealth, the strike must, therefore, really be rated as a most important one, even although its influence in this direction is mainly of a passive nature. As a proof by analogy of the correctness of this statement it may be pointed out that the most impoverished and unprogressive nations in the world are those where the working classes are either forcibly prevented from, or constitutionally unfitted for, carrying on orderly strikes. Where the restraining fear of strikes is absent the centralization of wealth in the hands of a minority of the people, with all its attendant evils, will be carried to extremes.

Perhaps an even greater benefit conferred on the working classes—that is, the majority of the people—by intelligent application of the principles expressed by the action of striking against unjust conditions, is the amount of personal respect it secures them from the employing classes, a consideration absolutely essential to the stability of democratic institutions. Human nature is so constituted that nothing appeals to it quite so impressively as the element of force, even when the latter contents itself with making a mere showing. Undue meekness of spirit, like familiarity, breeds contempt, and contempt from one class of citizens for another makes a mighty poor basis for democratic government. If the negroes of this country had gained their deliverance from slavery by fighting for it themselves, their political status today would be very much higher than it is. It is eternally true that he who would be free himself must strike the blow. In the final analysis, therefore, the strikes of workingmen are simply practical expressions of that eternal vigilance which is the price of liberty.—Coast Seamen's Journal.

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Industrial Notes.

Current advices state:

That a commission has been appointed by Secretary Metcalf, of the Department of Commerce and Labor, to make a thorough examination of the Chinese exclusion and immigration laws.

That the Court of Criminal Correction, at St. Louis, Mo., has ordered that barber shops be exempt from the Sunday closing law, on the ground that such places are a public necessity.

That out of a total of 160,746 members of 939 French trade unions (not including the unions of miners in the Nord and Pas-de-Calais departments) which made returns as to the state of employment during April, 149,917, or 9.3 per cent., were unemployed on the 15th of the month, as compared with 10.9 per cent. in the previous month, and 10 per cent. in April, 1904.

That the Japanese press of Honolulu says that the Tokio Government has issued a new order, which went into effect on July 1, increasing the number of immigrants per steamer to Hawaii from 100 to 400. Half of this number may be laborers, the other half women and children.

That the American Coöperative Association has been formed in Elgin, Ill. It will handle only union goods, and is composed of only union men, all of whom are active in the interests of labor.

That the London (England) Trades Council has adopted a resolution recommending trade unions to take an active part in the formation of coöperative productive stores.

That the new Russian workingmen's compensation act, promulgated on June 2 (13), 1903, and effective since January 1 (14), 1904, is acknowledged by the Russian press to be the most important act of labor legislation since 1897, when a normal working day was established.

That officers of the Lithographic Artists, Engravers' and Designers' League of America have made an agreement with the employing lithographers to raise the standard of trade in this country by forming an apprenticeship board, composed of employers and employes.

That in Germany is to be found the highest development of workingmen's insurance. In that country a social experiment has been conducted on a large scale, and the movement may fairly be said to mark the most interesting recent social legislation that is to be found anywhere in the world.

That the Rawlston anti-boycott bill, a measure similar to that recently enacted in Alabama, was overwhelmingly defeated by the recent Legislature of California.

That the Supreme Court of Michigan has held that the law requiring that a clause be inserted in contracts for public works to employ union men is constitutional.

That the Boston (Mass.) Pavers' Union, No. 1, has adopted a law that all members over 60 and all who become 60 years of age shall be exempt from all further dues or assessments for life, yet continue as active members, with all the rights to work, and entitled to all sick, accident and disability benefits, and their families to the benefits paid by the union upon their deaths.

Miscellany

A Sailor's Cruise in the Orient on the Flagship "Ohio."

The following is an account of a naval cruise from the pen of a son of Third Vice Grand Master Maier, who is a man-o'-war's man in his country's navy:

On the morning of July 1, 1905, the United States "Asiatic" fleet, consisting of the flag-ship "Ohio," the Wisconsin, Oregon, Raleigh, Baltimore, and the Cincinnati, and the five torpedo boat destroyers, weighed anchor and passed out of Manila Bay on a foggy and rainy day on a cruise to Cheefoo, China, for target practice and Admiral's inspection.

From the time we left Manila until we reached the Straits of Formosa it was foggy and rained continually, and we had rough weather for about two days.

The Oregon reminded me of a submarine, while she was in that rough weather, for her spardeck was under water about half the time.

The torpedo boat destroyers stood the weather splendidly for their class of boats. On the second day out the Oregon's port engine broke down, so she had to put back in Manila for repairs, and join the fleet later on. About six bells (3 p. m.) the Chauncy (one of the torpedo boat destroyers), dropped out of line, as her condenser was useless for a time. The Raleigh was sent back to give her a tow. The next morning the Raleigh and Chauncy took their places in the fleet formation, having repaired during the night. On the same afternoon, the signal went up on the flag-ship, "man overboard," and the way the boats from the different ships pulled after the life "buoys" was a sight worth seeing. The Chauncy again broke down, and the Raleigh was sent after her, and we never sighted them afterwards until we dropped mudhooks, in Woosung.

On the glorious fourth day of July, at 8 a. m., all the ships in the fleet raised the large ensign to the peak, while the bands played the "Star Spangled Banner," and at noon a salute of twenty-one guns was fired in honor of the day. That evening about sunset we sighted the U. S. N. C. Nanshan on her way to Cheefoo, having left the day before we did. We soon gained on her and passed her, and she was far back on the horizon next morning.

On the evening of the fifth of July the fleet anchored off the Woosung bar and waited until high tide next morning before attempting to enter the harbor. That evening about 7 p. m. a seaman fell overboard from the United States steamship Cincinnati, and was picked up by the Raleigh lifeboat crew. The next morning a pilot came aboard and we proceeded up the channel for Woosung and anchored near the German flag-ship,

ADAM J. MAIER,
Man-o'-War's Man, U. S. Navy, Asiatic Fleet

Furst Bismark. An exchange of salutes was fired between the different ships and all was quiet the rest of the day. The next evening the German flag-ship L. M. S. Hansa came in and exchanged salutes with us and left during the night for Ki-Chow, their naval station in China.

We were about three days in port getting on a fresh supply of provisions, having secured which we started on our trip to Cheefoo. The first night out the general signal was hoisted on the flag-ship for general quarters and searchlight drill. The destroyers went ahead at full speed to act as scouts. The next day at 3 p. m. the Ohio and Wisconsin had torpedo practice. After several hours' delay, the torpedoes were hoisted aboard the boats and given an overhauling. It was a fine sight to see those deadly instruments of war skimming the surface of the water. Yesterday was a foggy day and we tried to ram a merchant steamer and the destroyer Bainbridge. The fog was so thick that we could not see, so we anchored off Cheefoo, until it raised. Then we steamed into the harbor and anchored with the fleet and prepared for target practice, which will be held in a few days.

Adam J. Maier,
U. S. Flag-ship "Ohio," Asiatic Fleet,
Cheefoo, China.

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To Extend Foreign Trade of the United States.

The Department of Commerce and Labor, Bureau of Manufactures, has issued a circular letter to manufacturers and exporters of the United States, which is as follows:

To Manufacturers and Exporters:

The Department of Commerce and Labor is desirous of securing the co-operation of manufacturers and other persons interested in the efforts being made by this department, through the Bureau of Manufactures, to extend the foreign trade of the United States.

In furtherance of this work it is proposed to establish a comprehensive card index which will enable the department, upon application, to furnish information desired by manufacturers, or by intending purchasers, and it is contemplated to extend the system, if the necessary authority shall be granted by Congress, to our principal consulates.

To enable the bureau to prepare such an index, you are respectfully requested to fill in the accompanying blank, and furnish briefly any additional information which you may desire to have recorded in connection with your business. In mailing reply please use the inclosed envelope.

Very respectfully,
John M. Carson,
Chief, Bureau of Manufactures.

Accompanying the letter is a blank to be filled out, giving the following information: 1. Name and address (main office); 2. Location of branch establishments; 3. Description of product; 4. Capital; 5. Capacity per day, month or year; 6. Where product is sold (if abroad, give countries and ports to which shipped); 7. Any other information.

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Public Ownership Investigation.

Upon the request of its department of industrial economics and trade agreements the executive council of the National Civic Federation has decided to create a commission for the purpose of making a thorough investigation in America and Europe of National and Municipal Ownership and Operation of Public Utilities. It is intended that the scope of the commission's inquiry will be extended to determine the relative advantages of public ownership and operation, as compared with public ownership and private operation, and private ownership and private operation.

Examination of each system will be made as to its relations with and effects upon

"Wages, hours and conditions of labor;
Collective bargaining;
Cost and character of service;
Political conditions, civil service, spoil system and municipal corruption;
Financial results;
Taxation."

The commission will consist of about seventy members of the Federation, and will hold a number of meetings in New York, the first of them being scheduled for the 5th of the current month, and appoint a subcommittee to carry out the actual work of investigation for which it will be organized. The many conflicting reports as to the advantages and benefits being derived from public ownership of utilities in Europe has had more or less effect in retarding its development in America. Many conservative citizens who would vigorously support the principles of municipal ownership are discouraged from so doing on account of the disadvantages charged against it through the editorial columns of certain newspapers, which they read without a proper understanding or considerations of the motives actuating such hostility to the movement.

Now that the National Civic Federation has taken the matter in hand, it is to be hoped that the actual results of municipal ownership in such places as it has been undertaken in the United States, as well as in Europe, where it has been thoroughly tested, will be laid before the people of America without misrepresentation of anv kind. The advocates of this great principle have nothing to fear as the result of such an investigation.

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Book Notices.

Home Land.—The Magazine office is in receipt of a booklet, entitled "Home Land," from the San Diego Rental and Investment Company (Collison & Marrs), compiled by Mr. H. P. Wood, secretary, Chamber of Commerce, of that city. It is beautifully illustrated and descriptive of the many attractions of San Diego and the surrounding country as it exists today; also of the city as it was when California's fair land was under the dominion of Spain. There is a charming description of the Bay of San Diego and of the pleasures to be derived by being located near it. The suburban homes have not been forgotten by Mr. Wood, for from what he has to say of them we are led to believe they add much to the charm of the city. The climate of San Diego is treated in an interesting paragraph by Mr. Ford A. Carpenter, Observer U. S. Weather Bureau. Altogether the perusal of its pages makes one feel like visiting that beautiful region at the earliest opportunity and participating in the many joys of nature it affords and which are so clearly depicted therein. Copies of this book can be secured by addressing the San Diego Rental and Investment Company, of which firm Bro. Marrs, Secretary and Collector of Lodge 386, San Diego, Cal., is a member.

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"When Is the Proper Time?"

"When Is the Proper Time?" is the title of a beautiful and musical poem composed by Mr. Frank S. Brooks, Secretary of the Ohio Association of Coal Operators, and recently published in handsome brochure by Mr. Walter B. Kimball, of which a copy of the edition de luxe has lately reached the Editor's desk. The poem, which treats of the joys of fishing in different seasons of the year, consists of eleven stanzas, one and two to a page, and has been appropriately illustrated by the author with beautifully realistic pen and ink sketches, so true and perfect as to make one wish that the vacation recently passed were back again, or that time would adopt an eighty-mile per hour schedule, and in this way shorten the run to next year's stopping-off place, thereby permitting of indulgence once more in the sylvan glories thus so impressively presented, where, "Far from the madding crowd's ignoble strife," one could again

"Mingle with the universe and feel
What he can ne'er express, yet can not all conceal."

The poem is printed on pages of heavy deckle edged paper, 9x12½, and the cover, which consists of beautifully tinted thick cream paper, is decorated in green, with nautical design. That the icy blast of winter can not stifle the fisherman's joys is shown in the lines of the last verse, which are as follows:

"When streams are sealed, snow-bound the dormant land,
One views the retrospect and counts of joys the sum;
And then, with patient care and skillful hand,
Repairs the precious rod, and dreams of days to come!"

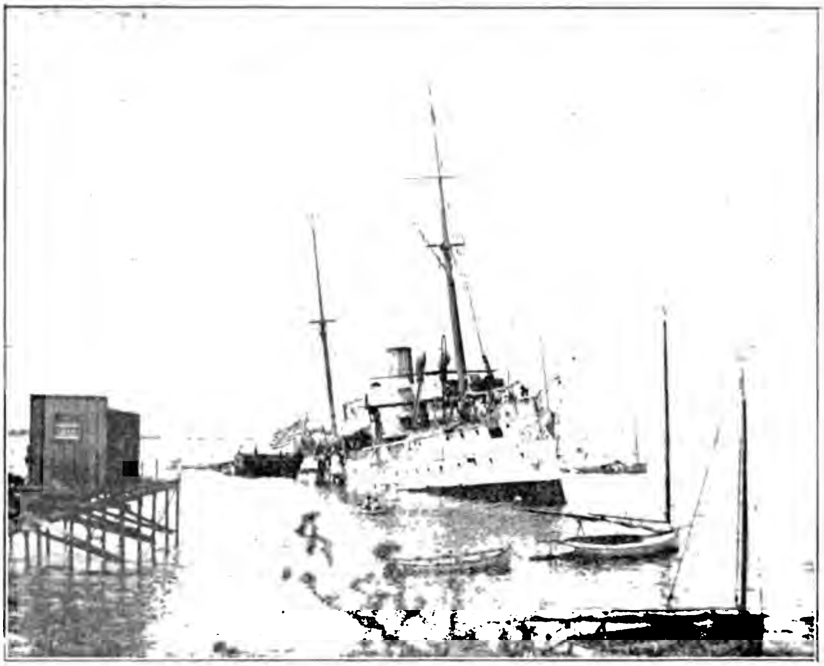
Never since reading Isaac Walton's "Angler," in the quiet recesses of a shady nook, has the Editor enjoyed a more truly pleasant literary treat.

With the attributes of poet and artist Mr. Brooks combines the instinctive qualities of the genial and open-hearted gentleman. He owes his artistic, as much as his poetic capabilities, to natural talent only. He has never been educated along that line, although his work would convey the impression that his ability was the result of careful development under the watchful eye of an accomplished preceptor. In both sketch and verse is sweetly and impressively apparent that pure inspiration which can spring only from a true appreciation and love of the beauties of nature.

Mr. Brooks has written several other poems treating of the sportsman's joys, which up to the present time remain unpublished. "When Is the Proper Time?"

was originally contributed to the National Sportsman, where its merit attracted the attention responsible for its publication as above described. One of his railroad poems appeared in the March, 1904, issue of the Magazine, under the title, "The Poet on the Bridge."

"When Is the Proper Time?" can be secured in edition de luxe from the McClelland Book Company, Columbus, Ohio.



U. S. S. BENNINGTON AFTER EXPLOSION, PULLED ASHORE TO KEEP FROM SINKING (BOW VIEW)

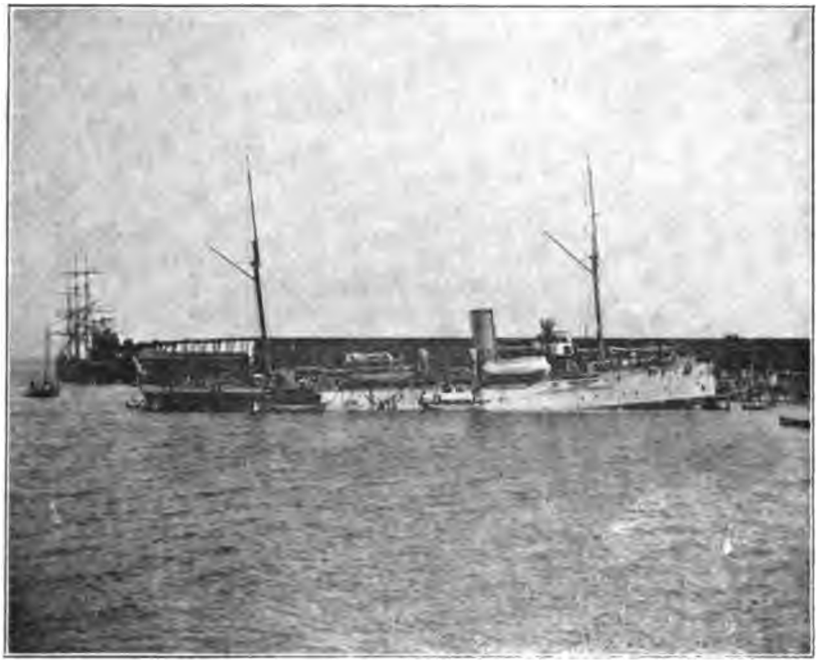
(Photo by Bro. D. L. Marrs, of Lodge 386)

The Bennington Disaster.

The disaster aboard the gunboat Bennington, at San Diego, Cal., in which so many brave men were killed and injured, ranks prominently, if not first, amongst the worst in the history of the navy attributable to neglect on the part of some one or more persons connected with the sea-fighting power of the United States. The Bennington was built in 1888, and has a displacement of 17,010 tons. She was one of the first vessels built for the new navy, having been placed in commission in 1891. Her maximum speed is 17 knots an hour. Her horse power is 34,036. Her main battery consists of six 6-inch breech-loading guns, her secondary battery of four 6-pounder rapid-fire, two 3-pounder rapid-fire, two 37-mm. and two Gatlings. Her cost, completed, was $490,000. Her crew consisted of 278 men, almost half of whom were either killed or wounded.

She distinguished herself in 1893 by a notable voyage which she made to Europe, in the course of which she called at thirty-one ports and traveled over twenty-four thousand miles in ten months. Last November she went to Colon and assisted in preventing the threatened revolution. Her officers are: Commander Lucien Young, in command; Lieutenant A. F. Yates, Ensigns C. P. Wade and N. K. Perry, Midshipmen Leo Sahn and L. H. Lacy, Past Assistant Surgeon A. E. Peck, Paymaster C. Morris, Jr., and Pay Clerk H. O. Metius.

The accident occurred on July 21st, while the Bennington was about to sail from San Diego's harbor to convoy the monitor Wyoming to Mare Island Navy Yard, San Francisco. Steam was up and everything in readiness when the starboard boiler B exploded, which was jammed back on boiler A, causing it also to explode.



U. S. S. BENNINGTON AFTER EXPLOSION, PULLED ASHORE TO KEEP FROM SINKING (SIDE VIEW)

(Photo by Bro. D. L. Marrs, of Lodge 386)

Commander Lucien Young is credited with the statement that the crown sheet of boiler B collapsed and the boiler head blew out the steel bulkhead separating it from boiler A, the other main port boiler, immediately after. Boiler A was forced back, the crown sheet collapsing and breaking down the steel bulkhead, separating it from the fire room. In response to the expression of an opinion credited to Rear Admiral C. W. Rae, chief engineer of the navy, to the effect that he could only account for the damage by the explosion of high explosives, Commander Young stated that such a theory was entirely wrong, that there were no high explosives on that part of the ship where the explosion occurred, and that he was positive that all damage was caused by the boilers, which were, as far as he knew, in first-class condition, as they had been within the past few months tested to 225 pounds pressure, and at the time of the explosion were carrying only 120 pounds. It would seem as though the explosion of the boilers, as described by Commander Young, would reflect discredit on the Bureau of Steam Engineering, there seeming to have been a tendency on the part of the officers of the ship to shift the blame on the bureau, and on the part of the officers of the bureau to place the responsibility on those of the ship. Admiral Melville, under whose direction the Bennington was built, made the following statement:

"Originally the Bennington's boilers were designed to carry 160 pounds of steam pressure; but after this lapse of time that service pressure should have been reduced. Even after repairs the boilers would be necessarily weaker than when new. No such explosion could have occurred with the water-tube boilers now generally used in the United States navy.

"The terrible destruction indicated by the newspaper dispatches could have been caused by the boiler explosion alone, without the explosion of the magazine. Unlike the water-tube boiler, where one or a dozen tubes might explode without destructive damage, except to life by escaping steam, the explosion of a boiler of the Bennington's type, especially because of the confined space with a tight armorplate deck, could rend a vessel almost to pieces. It will be found possibly, that many of the killed were scalded to death, as the escaping steam would fill every available space between decks, so that many of the crew in all likelihood died from that cause and not from shock or being struck down by rended iron work. . . . . As to the actual cause of the Bennington explosion only future examination may fix the responsibility. It may be that even such examination or investigation may not disclose the actual facts."

The explosion was so great that a number of men were blown into the water and, being injured beyond the possibility of saving themselves, were drowned. It is stated that at the time of the accident a boilermaker was on his way to effect some repairs on boiler B. It is also stated that on or about the 7th of last October, and about a month before Commander Young had assumed charge, Commander Kossuth Niles observed, "should the condition of the boiler furnace grow worse urgent necessity for going to the navy yard may arise" and that on or before April, 1904, an inspector reported that the ship was in no condition to make the cruise to Honolulu, from which place she had just returned before the accident occurred; that in response to these reports the Bureau of Steam Engineering ordered the pressure on boiler B reduced from 160 to 145 pounds, which it is stated was done some months after May, 1904, at which time the ship's boilers and furnaces were overhauled at the Mare Island Navy Yard.

The funeral on Sunday, July 23d, of forty-seven of the victims who were laid in one grave was the most sadly impressive incident of the awful catastrophy. Over sixty of the Bennington's brave crew are now at rest in the United States Cemetery on Point Loma within five hundred yards of the ebbing tides of the Pacific Ocean. The people of San Diego, who from the hour the accident occurred demonstrated their patriotic devotion in every way possible, joined by thousands with the military escorts in showing honor to the dead, bringing an abundance of beautiful flowers with which every flag-draped coffin was covered in profusion.

Admiral Rae is authority for the statement that there was no report before the bureau indicating that the boilers were in such a condition as to require that they be overhauled, and the report of the court of inquiry ordered by Secretary Bonaparte, would seem to add weight to his statement. The court consisted of Commodore H. N. Stevenson, retired, Captain E. J. Moore and Captain Thomas Phelps, and their report says that the ship was in excellent state of discipline and in a good and efficient condition with the exception of her boilers, which were in fair condition and efficient, considering their age (about fourteen years), and the use to which they had been subjected.

About 9.20 a. m. on July 21st, after both boilers had been filled and the furnaces started, it was observed that the steam gauge on boiler B showed about five pounds of steam pressure, and at this time Oiler Frank De Courtani, acting as water tender, directed D. N. Holland, fireman, second class, to close the air cock on boiler B; that the said Holland climbed up and closed the valve, and almost immediately the steam gauge on boiler B failed to register any pressure; that this was apparently not noticed by either the water tender or the fireman, and no attention appears to have been paid to the fact that the steam gauge failed to register, but they kept on working the fires and firing heavily."

The report states further that about 10.30 o'clock a small leak was found in boiler B. A request having been sent to the boilermaker to come and attend to the leak when the explosion occurred. That no one seems to have noticed any escape of steam from the safety valves of any of the boilers, and no one can state that any of the safety valves blew off at any time that morning; that no record of the safety valve of boiler B having been overhauled since July, 1904, could be found, though orders had been given for this to be done in March, 1905; that there is no record of the sentinel valves having been overhauled since July, 1904; that the safety valves were set at 145 pounds; but en route from Honolulu to San Diego orders were given to carry the steam pressure at from 130 to 135 pounds, not to exceed the latter, but the safety valves were not changed; that the hand gear for lifting the safety valves was not in working order; and that after an examination of the collapsed furnace flue, and from physical tests that they had made it was discovered that the material of this furnace flue was of good quality.

The opinion of the court follows:

"The court is of the opinion that the explosion was caused by excessive steam pressure in boiler B, which came about, first, by shutting the valve connecting the boiler with the steam gauge; second, by unusual and heavy firing in the boiler to get up a pressure which the gauge failed to show; third, by the failure of the sentinel and safety valves to lift at the pressure for which they were set."

The court holds responsible for the accident D. N. Holland, fireman (second class), Frank De Courtani, oiler and acting water tender, and E. B. Ferguson, chief machinist's mate, all of whom died as a result of the explosion, and recommends further proceedings against Ensign Charles T. Wade for neglect of duty in failing to inspect the boilers personally, and of seeing to it in person that orders given regarding the boilers were carried out.

Secretary of the Navy Bonaparte has approved this recommendation and ordered that Lucien Young, commander of the Bennington, be also tried by court-martial for neglect of duty. The Secretary, however, disapproved the court's findings that the Bennington was "in an excellent state of discipline and in good and efficient condition."

In compliance with Secretary Bonaparte's orders the trials of the officers referred to have commenced, that of Commander Young being under way at Mare Island, Cal., as the Magazine goes to press. Judging from the editorial comment the press of the country seems to regard the occurrence as in no sense an accident, but a shameful disgrace in comparison with which "loss in battle would be an occasion for pride." President Roosevelt, as well as Secretary Bonaparte, is determined that the blame shall be placed where it belongs, and that those within reach of the Government to whose neglect the horrible disaster is attributable be justly punished. Press dispatches state that it is Secretary Bonaparte's intention to institute a general inquiry, the scope of which shall include the Bureau of Steam Engineering with a view to discovering not only the mechanical or other defects in naval vessels, but as well any mismanagement or neglect of duty that may be responsible therefor. Statements credited to naval sources to the effect that there are fully a score of vessels in the United States Navy in all parts of the world having boilers of no better type than those of the Bennington, and some that are even older, but add to the importance and necessity for such an investigation.

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Our Commerce With Germany.

A recent report of the Bureau of Statistics of the Department of Commerce and Labor, states that twenty-one articles, or groups of articles, having each a total value of $1,000,000 or over, were imported into the United States from Germany during the past fiscal year, and twenty articles, having a total value of $1,000,000 or over each, were exported to Germany during the same period.

It will be seen from an examination of the tables which follow, that manufactured articles, chiefly iron and steel, silk manufactures, chemicals, cotton goods, earthenware, furs and furskins and toys, comprise the principal importations into the United States from Germany, and that in each case they show substantial increases in the period from 1894 to 1904. Importations of woolen goods, glass and glassware, cement and coffee have decreased, while beet sugar importations have declined from 11 million dollars in 1894 to but $50,509 in 1904, beet sugar having been free of duty in 1894 and dutiable in 1904. Of our exportations to Germany, raw cotton contributes more than one-half of the total, its share in 1904 being 109 million dollars out of a total export of 215 millions. But few manufactured articles appear in the list of our principal exportations to Germany, copper ingots, refined mineral oils, iron and steel manufactures, wood manufactures, agricultural implements and cotton manufactures comprising the only manufactured articles (with the exception of flour, which is classed by the Bureau of Statistics as a product of agriculture) the exportations of which to Germany amounted to as much as $1,000,000. The exports not classed as manufactures include raw cotton, beef products, provisions, corn, wheat, oil cake, fruits and nuts, fertilizers, lard, hams and other pork products, cotton-seed oil and paraffin. The only articles in the table which show decreases in exportations from the United

States to Germany are distilled spirits, which decreased from $4,119,733 in 1894 to $321,957 in 1904; oleomargarine, from $2,857,406 in 1894 to $2,287,231 in 1904; seeds, from $1,714,668 in 1894 to $516,877 in 1904; and hams, bacon and pork, which decreased from $1,375,420 in 1894 to $1,295,233 in 1904.

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Some Facts About Canada.[*]

At confederation 60 per cent. of Canada's export trade was to the United States, 30 per cent. to Britain. In 1903, 58 per cent. was to Britain and 31 per cent. to the United States.

Great Britain bought, in 1904, goods from Canada to the value of $4 per head; United States bought from Canada at the rate of less than $1 per head.

Canada's volume of trade per head, 1904, $85; United States volume of trade per head, $33.

Canada's relative percentage of commercial growth for 7 years, 1895-1902, was 107 per cent., as against 47 of United States, 26 of Britain, 38 of Germany, 21 of France.

Canada's net public debt is 260 millions —$46.55 per head.

Canada pays 11 millions annually as interest on her debt.

Britain is Canada's best customer—buying 85 per cent of Canada's exports.

The industries of Canada total $2,349,-717,000.

Value of products of industries (1901), $962,987,759 on 41 per cent. of capital invested.

Canada has 12 commercial agents abroad.

Canada's manufacturers have an invested capital of 441 millions.

One hundred millions of United States capital is invested in Canada.

Canada has 11,126 factories employing 360,000 hands. Wages, 1901, 88 millions.

Value of manufactured products, 1901, 452 millions.

Canada banks have loaned 416 millions to Canada manufacturers.

Our Wheat Fields.

Canada has the largest wheat field in the world, 300x900 miles.

Canada's wheat growing area in the west is (per Prof. Saunders' estimate) 171 million acres in extent.

Canada has less than 5 millions of this area under cultivation, or only 3 per cent.

If one-fourth of the 171 million acres were under wheat, it would supply Britain three times over and the home market as well.

By 1915 there will, it is estimated, be 10 million acres under wheat, yielding 200 million bushels.

The Canadian west is capable of producing three billion bushels of wheat.

The Canadian west is capable of producing 20 times Britain's annual imports of wheat.

Canada's wheat crop, 1904, 80 million bushels (60 millions in the west).

Canada's grain crop of all kinds reached, 1903, 275 million bushels.

Prof. Tanner, the English agricultural chemist, says western Canada has the richest soil in the world.

Canada's wheat yield for the last ten years averaged 18 bushels an acre.

Wheat yield in the United States for the same period, 13 bushels per acre.

Manitoba's average wheat yield for ten years, 21 bushels per acre.

Minnesota's yield for the same period, 14; Kansas, 12; Missouri, 11.

Wheat 62½ pounds to the bushel has been grown at Fort Simpson, 818 miles north of Winnipeg.

Canada's western wheat contains 10 per cent. more albuminoids than the best European varieties.

One hundred pounds of Canadian flour makes more bread of high quality than the same weight of any wheat imported into Britain.

Canada ranked first in wheat display at St. Louis Fair.

United States exports of wheat and flour to Great Britain are fast declining.

Canadian No. 1 hard wheat is the highest priced wheat in the world.

Relative values in Liverpool market: Canadian No. 1 northern, $1.14; No. 2, $1.11; best Russian, $1.05; Argentina, 99 cents; India, 91 cents.

Western Canada's estimated wheat acreage for 1905, 4 million acres. This should produce 72 million bushels, worth 54 million dollars.

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[*] Continued from September, 1905, Magazine.

A Word to the Wise

There is nothing that is more essential to the happiness of the human race than peace and harmony amongst individuals and nations. There is nothing more essential to the successful attainment of the aims of organized labor than good will and coöperation amongst the individuals and bodies of individuals constituting it. These facts are self-evident, yet quarrels have not been discontinued between individuals nor wars between nations; neither has the time arrived when differences between bodies of organized wage-earners have ceased to arise. In all conflicts one of the parties to the controversy must necessarily be the aggressor, and the nation, labor organization or individual who, when assailed by an adversary, fails to assume the defensive, must stand convicted of cowardice in the eyes of the world, and forfeit that respect and confidence upon which success, if not existence itself, depends.

No organized body of men was ever more desirous of maintaining peace and harmony with mankind in general, or of extending the open hand of warm good fellowship to sister organizations in particular, than is the Brotherhood of Locomotive Firemen. Conservative, tolerant and generous, it would rather brook an injury than resent it; but when assaults are insidious, continuous and premeditatedly calculated to injure its most vital interests and impair its efficacy in carrying out its mission of protection by obstructing its free exercise of the sacred duties it owes its individual members—when silence, born of a love of peace and harmony is mistaken for submission and becomes liable to assume the appearance of cowardice, it proposes to assert itself, and with a determination strengthened by the consciousness of being absolutely in the right, and with a power at all times judiciously exercised and wisely directed, defend by the use of every honorable means at its disposal those rights, interests and principles dear to it as life itself, no matter from what source such assaults may be directed, or who the assailants may be. Since occasion has arisen to justify the foregoing declaration, it is but right that the membership should be familiar with the situation which prompts it as it exists.

In Official Circular No. 7, appearing in the August issue, the Grand Master states that numerous inquiries have reached his office from members of our Order who have joined a sister organization at the earnest solicitation of the members of the latter, as to whether or not they can be expelled therefrom in the event they fail to withdraw from the Brotherhood of Locomotive Firemen within a period of ninety days or at any other time after joining said organization, and with a view to correctly informing such members stated that the question had been carefully gone into by our legal department, same having advised that section 27 of the constitution of the said sister organization was wholly insufficient and incapable of being construed so as to warrant or impel any division or officer of the said organization to expel a member therefrom simply because he refuses to sever his connection with the Brotherhood of Locomotive Firemen. He states further that an expulsion of this kind attempted or actually carried out would be absolutely illegal and void, and that our Brotherhood stands ready to assist its members in enforcing their rights in the premises. Legal proceedings have already been instituted with a view to this end.

Membership in the Brotherhood of Locomotive Firemen constitutes a weighty consideration in favor of an applicant seeking admission to other organizations, and why men should surrender such an advantage as a condition to joining an order composed of other railroad employes who are their constant companions and associates in the performance of perilous duties, and in whose comradeship they constantly face danger, and many of them meet death, can not be explained on any fair, reasonable or justifiable grounds.

The article from the pen of Bro. Maier, Third Vice Grand Master, entitled, "The Question of Jurisdiction, or, a Victory for the Open Door," appearing elsewhere in this issue, in which he details his experiences in connection with the adjustment of the "jurisdiction" question on the Great Northern and Northern Pacific Railways, taken together with the statements set forth in the Grand Master's circular, make it plainly evident that certain controlling influences in the Brotherhood of Locomotive Engineers are operating for the purpose of coercing our members into joining their organization and withdrawing from ours.

It is made clear by Bros. Maier and Smith that representatives of the Brotherhood of Locomotive Engineers have been endeavoring to induce certain railroad managements to deny to the Brotherhood of Locomotive Firemen the right to represent its engineer members before them, thus destroying the efficiency of our Brotherhood in protecting that class of its membership, apparently in the hope and expectation that B. of L. F. engineers, finding themselves thus deprived of organized representation before railroad officials, will be compelled to secure this advantage by joining the Brotherhood of Locomotive Engineers, and when thus forced into that organization, being confronted with a clause in its constitution compelling them to withdraw from the Brotherhood of Locomotive Firemen, must yield to the inevitable.

How such a course of procedure is consistent with the principles of the "open shop" so ardently advocated by a certain leading member of the B. of L. E. is not quite clear, nor is it in any sense compatible with that spirit of courtesy and fraternalism which should firmly and emphatically characterize the relations existing between two organizations whose members are of necessity so constantly and closely associated.

As before stated, the Brotherhood of Locomotive Firemen stands for harmony, peace and good will, but where the peaceful intentions and inclinations are all on one side, harmony can not prevail. When a man joins the Brotherhood of Locomotive Firemen and complies with all of its laws, it becomes the duty of our organization to protect his industrial interests while he is in railroad engine service, and any attempt that is made from any source to interfere with the free performance of that duty on the part of our Brotherhood towards its members will be resisted by every honorable means at its command. It is a man's privilege and right to join and continue his membership in any organization to which he is acceptable, and when any species of coercion is brought to bear upon him with a view to depriving him of the free exercise of his choice in this particular, it is evidence of a narrowness that is clearly incompatible with twentieth century progress, and a direct violation of the spirit of our national constitution.

The Grand Chief of the Brotherhood of Locomotive Engineers has vigorously declared for the individual liberty of non-union men, and proclaimed time and again, for reasons best known to himself, on certain occasions at certain meetings largely attended by prominent employers of labor, that his organization would under no condition in any way coerce non-Brotherhood locomotive engineers into joining its ranks, and that they are absolutely free, so far as its policy is concerned, to choose for themselves as to whether they shall become Brotherhood men or not. Does it not appear like a step too far in that direction to undertake to restrict the freedom of a sister organization in performing its duties towards its membership, and to endeavor to take advantage of the disability thus created for the purpose of coercing certain of its members into joining an order they clearly do not want to join, and then by virtue of their so doing compelling them to withdraw from the order in which they prefer to hold membership?

If the non-Brotherhood man is entitled to such freedom from interference, then why should not the B. of L. F. man be entitled to the same consideration?

It should be clearly understood that individual members of the Brotherhood of Locomotive Engineers by the thousands heartily disapprove of the attitude assumed by the element in their organization accountable for the attempted establishment of this policy towards our Brotherhood, as would have been very effectually demonstrated on the Northern Pacific Railway had an issue been forced, and there is absolutely no reason why the pleasant relations existing between individual members of the two orders should be in the slightest degree disturbed as a result thereof.

The adjustment of the "jurisdiction" question on the Great Northern and Northern Pacific Railways, which provides that an individual engineer shall have the right to choose from amongst his own class a committee to represent him in personal grievances, as well as the decision of those companies "to leave to the individual determination of its employes the matter of their affiliation with" other organizations, is, in the matter of jurisdiction, all our Brotherhood asks. It must be evident to all fair-minded men that such a rule protects the individual in his choice of membership, and that the exercise of absolute freedom in this direction should be one of his inalienable rights, no one can deny.

There are engineers in the B. of L. F. who will never join the B. of L. E., for reasons best known to themselves, and upon which they are fully entitled to act. Is it better that such men should be B. of L. F. men or non-Brotherhood men? What can possibly be gained in the advancement of the interest of wageearners in general by precipitating strife where harmony and mutual co-operation is so essential to the success of all concerned? The Brotherhood of Locomotive Firemen does not compel non-Brotherhood firemen to join its ranks, and they certainly do not propose to say to a man after he becomes a member of his own free will that he must leave the organization and sever associations and connections which he is desirous of perpetuating, simply because he has been promoted to the position of running a locomotive. It is our bounden duty to protect him, and we propose that that duty shall be performed.

It may be well to suggest that the B. of L. F. has precisely the same if not more formidable weapons of defense with which to protect itself against injustice as the B. of L. E. has with which to conduct its campaign of aggression. What we propose is that each order shall stand on its merits. Merit alone is the inducement and the only inducement we offer. Could our organization make use of coercive tactics effectively in forcing non-Brotherhood firemen into its ranks or retaining those of its members who may see fit to withdraw therefrom for the purpose of joining the B. of L. E., or for any other reason, it would scorn to do so.

The Brotherhood of Locomotive Firemen, as stated by Bro. Maier, has always supported the Brotherhood of Locomotive Engineers loyally and unflinchingly when it was in the right, and will continue to do so. But we do insist that its attitude towards our organization should be one of consistent courtesy and fraternalism compatible with the close ties that bind the members of each together in their daily associations. As before stated, we want peace, harmony, good will and uninterrupted coöperation — providing we can enjoy such conditions with honor to ourselves.

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Why This Month's Magazine is Late.

Owing to the printers' strike and consequent general tie-up in the printing industry the publication of the current month's issue of the Magazine has been somewhat delayed, on account of which it may be late in reaching some of its readers. The contract for printing and binding the Magazine is held by Mr. Wm. B. Burford, proprietor of the largest printing establishment in Indianapolis. Mr. Burford was a member of the Typothetae, having joined that body about ten years ago for the benefits to be derived from association with other men engaged in his line of business and not anticipating the possibility of its becoming entangled in any industrial controversies. In view of the fact that Mr. Burford is involved in certain long-time contracts into which he entered in the belief that the nine-hour day standard would continue for some time he determined to seek an understanding with some of his patrons as to an increase in the cost of work before signing an agreement with the Typographical Union for the establishment of an eight-hour day at an increase in wages over and above that being paid for nine hours.

He stated from the beginning that he would not under any circumstances "rat" his shop or, in other words, employ non-union printers, and that rather than do so he would prefer to abandon the printing business altogether and rent his buildings for other purposes if it were apparent that he could not, without loss, continue same after acceding to the demands of the union. Mr. Burford was active as a member of the Typothetae in opposing any steps on the part of that body looking to its interference in the pleasant relations prevailing between individual employing printers and their employes (which has in his case existed for over thirty years), and in the meeting at which it was decided to take a stand against the Typographical Union on the eight-hour question, he declared that he would determine for himself whether or not he would continue his business under the conditions proposed by the union printers, and that if he could all of his union men would, as far as he were concerned, continue in his employ, otherwise he would abandon the business entirely. In accordance with this announcement at the end of a week's suspension of business he decided to sign the eight-hour schedule, immediately upon his doing which all of his men returned to work.

While negotiations were being conducted looking to a settlement the best of good will prevailed between himself and each and every one of his employes, many of whom have been with him for periods ranging from fifteen to forty years. Being the proprietor of the largest printing establishment of the city other printers naturally followed his course in signing the scale, and thus the ranks of the Typothetae in Indianapolis were broken. Mr. Burford's action in signing the scale involved, of course, his withdrawal from the Typothetae, and it should be said in this connection that he absolutely declined assistance tendered him, by that body, in its fight against the union printers. He also declined the offer of the Typothetae to furnish him with nonunion employes. It is needless to say that his attitude in the present controversy has incurred for him the displeasure of other employers, not only locally in Indianapolis, but possibly at large throughout the country. We mention the foregoing so that no doubt shall exist in the minds of anyone as to the character of the firm by which the Magazine is being printed.

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Wedding Bells.

Announcement of the marriage of the two daughters of Bro. E. A. Ball, our worthy Fourth Vice Grand Master, Miss Nellie Eugenie to George A. Pugh, M. D., of Kenosha, Wis., and Miss Maggie Ethel to Mr. Henry J. Peter, of Stratford, Ont., has reached the Magazine office. The double wedding took place at the home of Bro. Ball, in Stratford, Ont., at 2 o'clock p. m., Tuesday, August 29, 1905, Rev. Robert Martin, pastor of Knox Church, of which the young ladies have been members of the choir for some time, officiating. About fifty guests assembled to witness the pretty and impressive ceremony, during which the two couples looked charming as they stood under wedding bells of white, in a bay window banked with green. The bells were composed of sweet peas and asters. In the drawing-room the decorations were of pink and white asters. The brides looked beautiful, being attractively gowned in white silk, and carrying bouquets of cream roses. During the marriage a wedding march was played, after which real bells, concealed within the flower bells, were rung.

Congratulations over, the guests repaired to the dining-room, which had been appropriately decorated for the occasion, and partook of a sumptuous repast. Five intimate girl friends of the brides assisted.

Dr. and Mrs. Pugh and Mr. and Mrs. Peter left on the afternoon train for a trip down the St. Lawrence. On their return Mr. and Mrs. Peter will reside in Stratford, and Dr. and Mrs. Pugh will make their home at Kenosha, Wis. The young people received many beautiful presents, among which were tokens of remembrance from the Knox Church choir.

The Magazine extends its hearty congratulations, with the sincere wish that the young couples may ever find their new homes the dearest spots on earth, and enjoy future lives of undimmed happiness and prosperity.

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Anonymous Communications.

Anonymous letters still reach the Magazine office occasionally, notwithstanding the special notifications already published to the effect that no communication of any kind will be given space in the Magazine unless the writer makes his identity known to the Editor by signing his name thereto, together with his address. This does not mean that a person's name will appear in the Magazine if that person does not desire it. The writer of any letter or article suitable for publication who does not wish that his name be published can have it substituted by any permissible nom de plume he may suggest.

As stated in a former notice of this kind, some anonymous letters reach the Editor containing questions on machinery, air brake or train rules which the writer evidently desires very much to have answered, and which would be answered but for the fact that they are anonymous. If duplicates of such communications be sent in, properly signed with the *name and address of the writer*, they will be given careful and prompt attention.

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Death of Bro. H. K. Baker.

As the Magazine goes to press, the sorrowful news of the death of Bro. H. K. Baker, of Lodge 13, who was killed in a railroad accident on the night of September 8th, has been received. No particulars other than the above have come to hand.

Many of the brothers who were delegates to the Ninth Biennial Convention in Buffalo last year will remember Bro. Baker as the delegate from Lodge 13, and who was one of the Grand Wardens. He was also a prominent member of the General Chairman's Association. His genial and pleasant personality won for him many new friends and acquaintances at that convention, and it will be with deep sorrow they will learn of his sad and sudden demise. The Magazine extends the heartfelt sympathies of the entire Brotherhood to the bereaved family and other relatives and friends of the deceased brother.

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The Conductor Put On Speed.

A clipping from a St. John, N. B., newspaper, sent in by a brother located in that city, betrays very forcibly the inexcusable ignorance relative to railroad matters displayed by some reporters. The item, which is entitled "Made Fast Time on a Late Train," explains that—

"The Boston train was an hour late in arriving at the Union depot last night, owing to a delay at Fredericton Junction.

"The Fredericton branch train left Fredericton on time, with a car full of the Masters' tourist party, which had gone up river yesterday for a trip to the capital. About half way between the junction and Fredericton the engine broke down, and it was almost two hours before they got to the junction.

"Their car was attached to the Boston train, and *Conductor Johnson put on speed.* The forty-four miles from Fredericton Junction to St. John were run under one hour, including time for two stops. In spots the train was going a sixty-mile clip, and when Conductor Johnson entered the tourist car after Fairville was left there was a unanimous cry, 'Say, Mr. Johnson, are you going to put the whip lash on again?' "

In commenting on the foregoing the brother remarks, "Wouldn't that frost you? 'Conductor Johnson put on speed.' Engineer and fireman must have been back in the parlor car asleep."

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Sparks.

Your attention is called to the fact that OUR EXTRAORDINARY PREMIUM OFFER still holds good. Orders are coming in steadily for both premiums, but we want to see yours come in also.

Mr. W. M. Finck appears in this issue of the Magazine with an attractive advertisement of the "Detroit Special" overalls. The testimonial from a prominent railroad man who has worn them is strong and convincing and should be an inducement to our readers to give these goods a trial.

If you have not yet received one of our B. of L. F. premium rings, send in two subscriptions and receive one. You will enjoy wearing it.

Sears, Roebuck & Co., the great mail order house, are beginning in this issue a series of advertisements which it is to be hoped will be continued indefinitely. Their clothing offer announced in their advertisement this month is all that any one could desire.

Your spare moments could be put to good advantage in soliciting subscriptions for the Magazine, thus swelling its circulation, and placing yourself in a position to receive either one or both of our premiums.

The unusually large volume of advertising in this issue of the Magazine is indeed gratifying. These results have been obtained by much hard work and the permanency of our Magazine's advertising of course will depend largely upon the business our patrons realize from our readers in response to their advertisements. It is the desire to carry in our Magazine at all times, advertisements of reputable firms dealing in such goods, medicines, etc., as are salable to our class of readers. We therefore urge upon our readers the policy of giving our advertisers the preference whenever possible in the purchase of all such articles as they require.

Have you yet received one of the "Wonder" knives we are offering as a premium for two subscriptions? If you have not, would advise you to go after one right away. You can certainly work "wonders" with it. Remember it is a combination knife containing many different useful instruments.

The Brotherhood Glove Company, of Battle Creek, Mich., is a new advertiser this month. They offer to sell gloves by mail at special prices. Look them up.

The Magazine sells on its merits. Send for samples and distribute them around among your railroad friends and they will do the rest.

Will be glad to have you send in subscriptions whether retaining commission or desiring a prize. It is optional with you.

When a man can get a made-to-order suit for $10.00, with the privilege of selecting the goods before buying, there is no reason why he should not be well dressed. This is the proposition made in the advertisement of Owen T. Moses & Co., in their advertisement in this issue of the Magazine.

If you want a nice ring with the emblem of the Brotherhood or of any other Order, you could not secure one more easily than by sending in two yearly subscriptions to the Magazine.

The New Air-Brake Association Questions and Answers have just been issued in book form and are for sale by Mr. F. M. Nellis, 111 Broadway, New York, N. Y. No railroad man employed in train service can afford to be without this valuable book of over four hundred pages, comprising two hundred questions pertaining to the Westinghouse and New York Air Brakes, and their correct answers. A half-page advertisement of this excellent book appears in this issue of the Magazine. Read it, for it contains much valuable information of direct interest to you.

Information regarding commission and premiums offered by the Magazine to those who desire to solicit subscriptions will be freely furnished upon application. Write to John F. McNamee, Editor of Magazine, 806-7 Traction Terminal Building, Indianapolis, Ind.

A fine emblem sofa pillow is offered in the advertisement of H. M. Clark & Co., of Cedar Rapids, Iowa. These pillows are stamped in designs emblematic of any of the railroad orders, and when worked in accordance with instructions make a splendid piece of fancy work for beautifying the home.

If you already have a knife and ring, secure others. They will come in handy to give to your friends and will certainly be acceptable. No matter what business a man is engaged in, our "Wonder" knife will prove useful, and a ring bearing emblem of any Order to which he belongs will be appreciated.

A new advertisement of the Fuel Protector Company, of Jackson, Mich., showing a cut of their device, appears in this issue. This will serve to give our readers an idea as to the workings of this attachment and how it effects its saving in the household fuel bill.

A sample of a very perfect timebook designed by R. S. Carew, a member of Division 360, of the B. of L. E., has reached the Editor's desk. The timebook is enclosed in a very neat and durable card case which permits of its being carried in the vest pocket without any danger of injury to the records it contains. The book is arranged with blanks providing for the record of every item and detail connected with each trip, including number of train, points of starting and destination, hour called for, class of service, leaving time, time of arrival, number of hours on duty, overtime, names of engineer and conductor and columns for carrying totals forward, as well as recording the amount made each trip.

The book is adaptable for use by any one employed in railway train service, and can be secured by addressing Bro. R. S. Carew, 52 South Erie street, Massillon, Ohio. Card case with the name and address of the purchaser printed on the inside cover in gilt letters, together with files to last for six months, can be secured for 50 cents.

All locomotive enginemen should be deeply interested in the Franklin Automatic Fire-Door Opener which is advertised in full-page space in this issue of the Magazine. No one can appreciate the value of this device, to say nothing of the economy in fuel, more than the man who has spent some of the best years of his life "tugging" at a door chain.

Your co-operation will help us swell the circulation of the Magazine to the 100,000 mark. Are you willing?

Bro. Harry W. Horder, of Lodge 237, writes the Magazine office that his lodge is on the verge of another boom, and that the boys have their coats off for another rally.

Herbert L. Joseph & Co. is a new advertiser this month with a proposition to furnish our readers with diamonds on an easy payment plan. Their offer will certainly appeal to all interested in securing gems for holiday gifts.

At a recent meeting of Lodge 588, of Charlottesville, Va., resolutions of sympathy and condolence were adopted upon the death of Bro. Geo. H. Booth, who died of typhoid fever, August 13, 1905, a copy of which was sent to the bereaved family.

A new testimonial as to the excellent service secured from the "Brotherhood Gloves" is published in the full-page advertisement of Brothers Dinius & Rowbottom this month.

The brothers and sisters of Homer H. Schwartz feel very grateful to the members of Bee Line Lodge 527 for their kindness and courtesies extended to them during their bereavement occasioned by the loss of their brother.

Bro. F. C. Holman writes that the entire membership of Lodge 131 join in offering their sympathy and condolence to Bros. Charles Curtis and Julius Ruff and families upon the recent visit of the grim reaper into their families.

The Elgin Watch Co. shows this month a splendid advertisement of their Veritas Model No. 214, the "watch that runs 42 hours with one winding."

Mr. and Mrs. M. C. Petersen wish to extend their sincere thanks to the members of the Clinton, Iowa, and Tucson, Arizona, lodges of the B. of L. F. for the kindly assistance tendered them during the sickness and death of their son, Bro. C. Petersen, Jr., of Lodge 84, B. of L. F., and to assure them that their kindness shall never be forgotten.

Ambitious railroad men, and those who have high ideals in view for their growing boys and girls, are deeply interested in means for obtaining an education. The long expensive terms in college are not always within reach, but excellent facilities for obtaining an education through the mails are offered by the International Correspondence Schools of Scranton, Pa. Next winter will be a good time to take up a course of lessons. Their advertisement appears in this issue of the Magazine. Read it carefully and write for further information.

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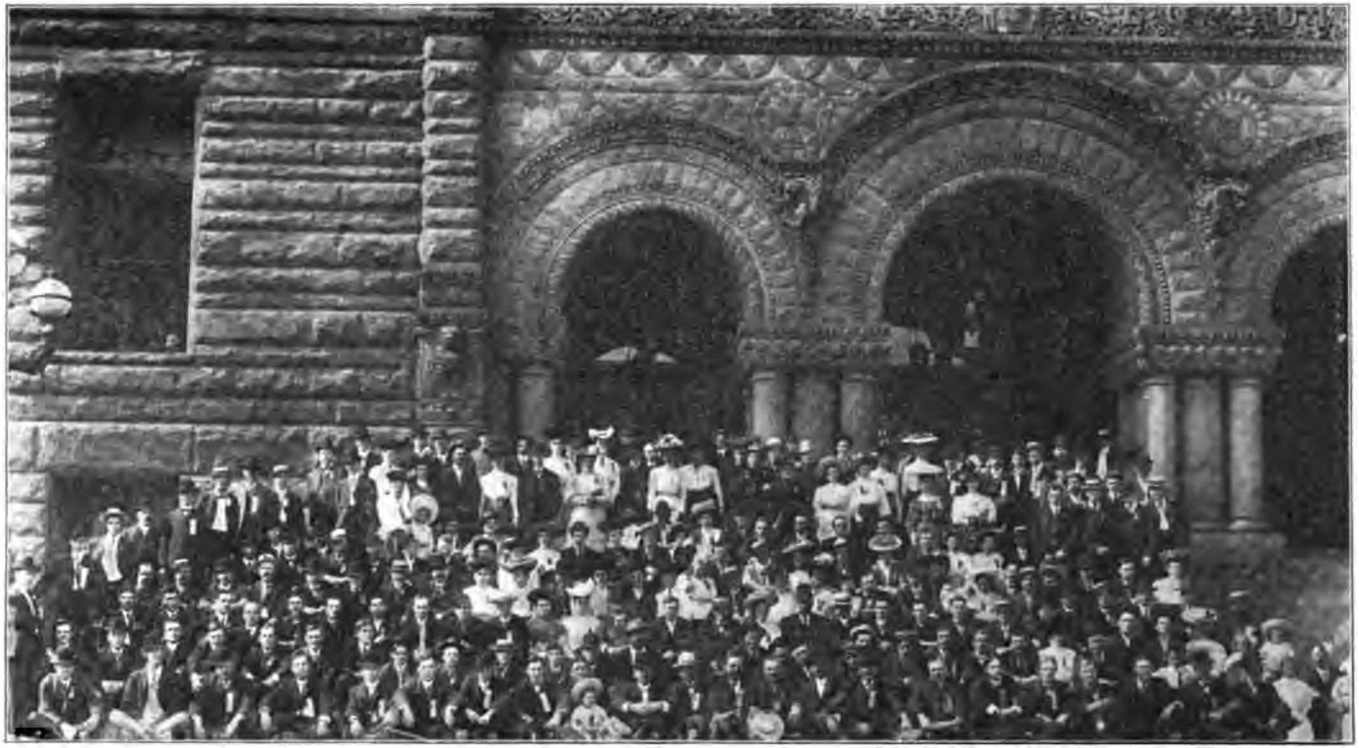

GROUP OF DELEGATES AND LADIES, GRAND UNION MEETING OF THE BROTHERHOOD OF LOCOMOTIVE FIREMEN, HELD AT TORONTO, ONTARIO, AUGUST, 1905

Forum

The Toronto Union Meeting.

To the Editor of the Magazine:

The following is a report of such of the proceedings of the executive sessions of the Toronto Union Meeting as it is permissible to have published. Same would have been forwarded for publication in the September issue, but that the writer knew it would be impossible to have it reach the Magazine office in time to appear in that number:

First Day, August 8th.

The forenoon session was opened by Fourth Vice Grand Master Ball, who delivered an address to the assembled brothers at some length on the object of the union meeting and the nature of its work, at the conclusion of which adjournment was taken until 2:30 p. m.

Afternoon Session.—Meeting opened at 3:00 p. m. Officers elected for secret sessions were: Chairman, Bro. E. A. Ball, Fourth Vice Grand Master; Secretary, Bro. Thomas Davidson; Warden, Bro. George K. Wark, and Guard, Bro. H. Shaefer. Bro. Ball in opening the afternoon session gave a short discourse on matters pertaining to the Brotherhood and railroad work. Bro. Thomas Burke, Chairman of the Joint Protective Board of the Santa Fe, on being called to the platform spoke at some length on legislative matters, dwelling on the necessity of having representation before the various law-making bodies in both countries and touching particularly on this subject in connection with the Dominion Parliament. It was moved and seconded that the position that Bro. Ball had taken relative to national Canadian legislative representation be indorsed; motion carried.

Bro. Quirk, Secretary of the Grand Executive Board and legislative representative of the State of New York, spoke very interestingly and entertainingly on legislative and Brotherhood matters and was followed by Bro. Kelly, Chairman of the Grand Executive Board and General Chairman of the N. Y., N. H. & H. R. R., in a very interesting address on the same subjects. At the conclusion of Bro. Kelly's remarks, Bros. Wark and Patton also spoke on legislative and Brotherhood matters. These remarks, as well as those of the brothers preceding them, were thoroughly appreciated, as was evidenced by the warm expressions of approval with which they were greeted.

Second Day, August 9th.

Meeting opened at 9:30 with Bro. Hannahan in the chair. Bro. Kelly, Chairman of the Grand Executive Board, on being called to the platform, took up the question of relationship between our Brotherhood and that of a certain sister organization and dealt with the subject very forcibly, making clear to the assembled brothers the character of the methods employed for the purpose of securing unfair advantages over members of the B. of L. F. and our organization in general. Bro. Kelly's remarks on this subject were very interesting and clearly demonstrated the justification for all honorable defensive methods on the part of our Brotherhood. Bro. Kelly during the course of his remarks was accorded generous applause.

Bro. Quirk also spoke at this meeting, discussing in an interesting manner Brotherhood affairs of the State of New York.

Third Day, August 10th.

Meeting opened at 9:30 a. m. with Bro. Hannahan in the chair. Bro. Ball took up the subject of Brotherhood matters on certain Canadian railroads, and when he had concluded Bro. Hannahan delivered an address in which he stated that the Brotherhood of Locomotive Firemen proposed to handle the grievances of its own men regardless of what position any other organization might take or try to take. The words of the Grand Master were inspired with a determination which clearly evidenced the fact that he meant business. He was followed by Bro. Wilson, First Vice Grand Master, who also spoke very interestingly on Brotherhood matters as pertaining to certain Canadian railroads. At the conclusion of Bro. Wilson's remarks, Bros. Champion and Burrell, of the International Union of Machinists, were introduced in accordance with a resolution adopted at the first meeting and discussed in an entertaining manner industrial matters of particular interest to their organization and

GROUP OF DELEGATES ATTENDING THE GRAND UNION MEETING OF THE BROTHERHOOD OF LOCOMOTIVE FIREMEN, HELD AT TORONTO, ONTARIO, AUGUST, 1905 its members in Canada. Their remarks were well received by all present.

Letters of invitation to the Brotherhood to meet in the City of Toronto in the year 1906, received from the city council and board of control of that city, were then read, after which it was announced that Mayor Urquhart and Alderman J. J. Graham were at the door. These gentlemen on being introduced delivered very interesting addresses and extended a welcome to the brothers to meet in Toronto again next year. That the visit of the gentlemen was appreciated was clearly evidenced by the vigorous applause which greeted them. Upon their retiring it was moved and seconded that a grand union meeting be held annually in Canada, which was carried. By motion nominations were opened for the next union meeting city and Ottawa was chosen.

On Friday, August 11th, twelve of the committee took the steamer "Chicora" from Toronto to Lewiston to visit the falls, being accompanied by Bro. C. A. Wilson, First Vice Grand Master, and several other brothers on their way home. The trip was keenly enjoyed by all and particularly by Bros. A. P. Kelly and R. Quirk, who seemed as though they were taking full advantage of the opportunity to lay in a store of good, fresh air from Lake Ontario, apparently not expecting to have another chance again in the near future. We hope that when the next union meeting comes around they will both be able to be with us, as the information gained by our boys from their addresses was botb beneficial and entertaining. Bro. Fred McGregor was one of the members of the General Chairmen's Association who particularly enjoyed himself, and we hope that not only Bro. McGregor, but every member of that body will be in a position to be present at our next union meeting.

MEMBER.

Accident Insurance for Firemen.

There seems to be some misunderstanding in regard to the article I wrote and which was published in the July issue of the Magazine on "Accident Insurance For the Firemen By the Firemen."

I don't mean to say a brother should lose a week or ten days without being paid for same, but as most companies do not comply with claims for a week or less I based my time the same. As far as its being impossible for a brother to have his claim signed by the Master and attending physician, I don't think Brother Arnold would get very much insurance from any other company without having his physician sign the statement, and in most cases by the master mechanic. He seems to convey the idea that I intended for the affected brother to receive nothing for the first ten days. Furthermore it should be optional with all brothers whether or not they take the accident insurance.

I don't believe brothers who are out of the service would, as a general rule, care for this part. I do not think a brother should receive protection for twelve months when he had failed to keep up his dues. His accident insurance should be paid for quarterly and expire the same as his other insurance for nonpayment of dues.

My idea for having the Master sign claims is for this reason: firemen who are just taken into the Order in a great many places are up against the extra board and not making very large wages per month and might be carrying a policy for $2,000. For $20 per week one might easily get a doctor to sign a claim, and by laying around draw more than they were making when at work, while if the Master had charge he would know, or if he did not he could find out very easily from members that did. I would like to hear from some more of the brothers on this subject.

A. G. HIGGINS.

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A. Devine, 469 H. Torham, 262 A. P. Marshall, 559

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JOINT PROTECTIVE BOARD, CANADIAN PACIFIC RAILWAY SYSTEM

In the Field

Fourth Vice Grand Master.

On arriving at Campbellton on August 1st I held a special meeting with the members of Lodge 53 and found their books in excellent shape, a good balance on hand and beautiful new regalia in the lodge-room. These members are to be congratulated on the good showing since their institution.

At River du Loup two interesting meetings were held with the members of Lodge 119, at which every available member was present, thus showing their appreciation of the organization and its benefits in that section of the country. Everything is progressing favorably in this lodge.

Stopping at Hadlow Cave I met several members of Lodge 610 in secret session, and from the reports I find they have conducted their affairs in a manner that demands the admiration of all our members, especially as duty keeps them frequently away from home.

Crossing the St. Lawrence to Quebec City I held a good meeting with Lodge 550 and was more than surprised to find such a wonderful improvement since my last visit. Membership increased, finances in a better condition and books kept in a creditable manner. I hope that all eligible men on the Quebec and Lake St. John will join with them, and their future success will be better than ever before.

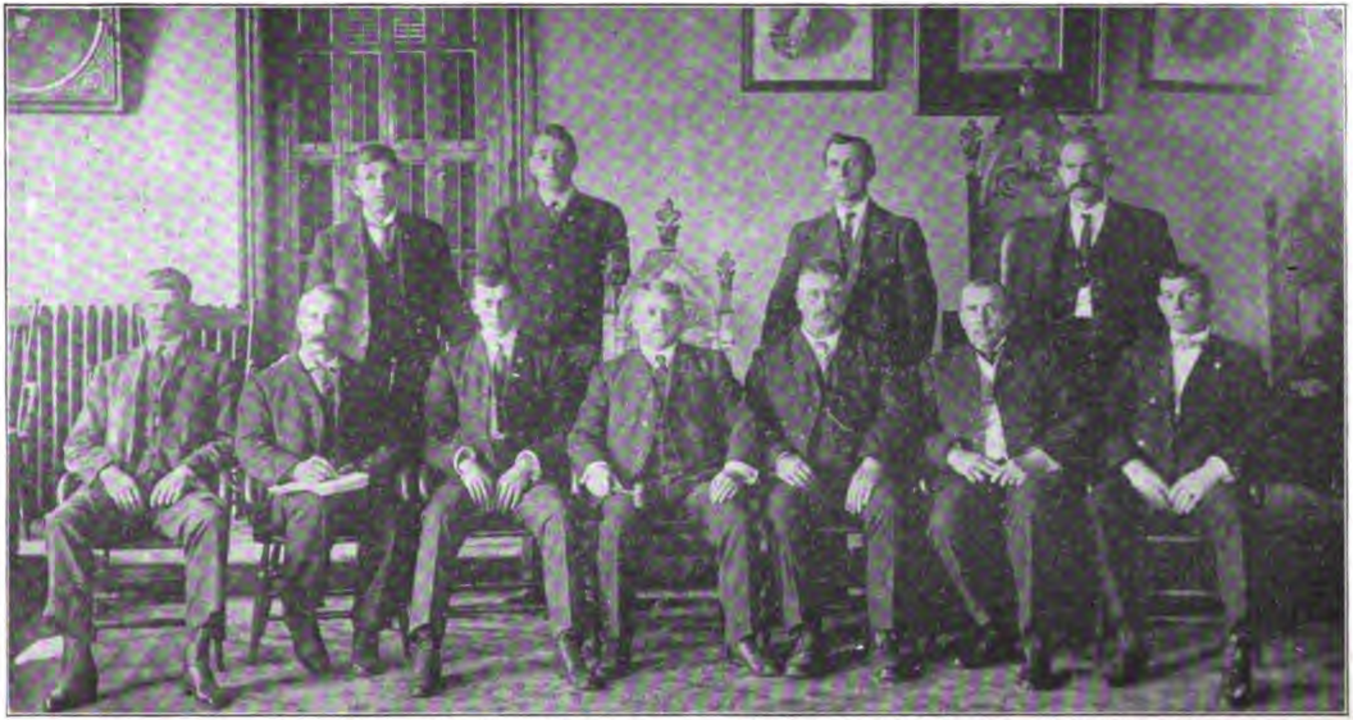
There are several of our lodges in this section of the country that are largely composed of members of French descent, and while they can read and write the English language, yet there are many words that they do not understand in our dialect, and if it were possible to have a French Ritual and Constitution it would be greatly appreciated by our members in Quebec.

At Toronto an excellent meeting was held in the interest of Lodge 67, representatives from Lodges 262, 468, 596 and 150 being present. Some very interesting and helpful debates were participated in by all those in attendance. As usual the Constitution is strictly enforced in this lodge, which accounts for its excellent standing.

It must have been a source of great pleasure, not only to the committee who so successfully arranged and carried out the details of our Canadian Union Meeting, but to all who had the privilege of being present on that occasion. We were glad to welcome Grand Master Hannahan, Vice Grand Master Wilson, Bros. Kelly and Quirk of the Grand Executive Board, and many other brothers from several states in the Union, as well as from the length and breadth of our Dominion, to that meeting. It can hardly be estimated what good will result to our members in the future, especially to those who were present and heard the history of the organization so ably related, its great benefits so plainly revealed, and what it has done for our members in all sections of the country so well expressed. After all the experiences of this Toronto Union meeting I fail to see how any of those present could return to their homes without being well satisfied that they had spent a pleasant and profitable time, besides realizing that they were members of an organization which is second to none, and respected wherever instituted. This same spirit of unity and brotherly love, which should prevail among all our members, was manifested a few days ago in Toronto when the 74th Regiment of Buffalo and Queen's Own Rifles marched together under the shadows of their national banners to attend Divine services in St. James Cathedral, where they all knelt before the same altar and worshiped the one God, regardless of country, creed or politics, thereby setting an example for every inhabitant on this continent to follow. May that same spirit of unity and brotherly love continue to eternity.

In company with Bro. C. A. Wilson we attended the regular meeting of Lodge 262 at Toronto Junction and found a large representation present, besides visitors from Lodges 468, 67, 596, 631, 559 and 341. A very pleasant and profitable time was spent by those in attendance, for by union lodge meetings of this kind our brothers hear the reports from the different sections of the country and are in a better position to promote legislation for each other's needs, profit by each other's experience and become better acquainted with one another. As all matters pertaining to lodge duties are based on the Ritual and Constitution and strictly adhered to, it is always a pleasure for me to meet with this lodge.

We also had two large and successful



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Wm. Shellenberger, 211 Chas. Boddin, 507 Gen. Sec'y Chas. S. Anderson, 496 Vice Chmn Wm. F. Metz, 250 Retiring Chmn H. J. Reilly, 11 Treasurer C. A. Wilson, First V. G. M. Chas. Barrett, 472

JOINT PROTECTIVE BOARD, LEHIGH VALLEY SYSTEM meetings at East Toronto in the interest of Lodge 596, when several candidates were conducted through the ceremonies of initiation by Vice Grand Master Wilson in a manner that was not only instructive, but very impressive, and will remain fresh in the minds of some of those present for years to come. It was indeed a pleasure for me to meet so many of the brothers with whom I had been so closely associated on the rail in days gone by and rehearse some of our past experiences.

On going to Michigan I was requested to have three of our unfortunate brothers examined for disability, Bros. Chas. Wild, of Lodge 508, and Thos. Moriarty, of Lodge 401, and R. Redemsky, of Lodge 431. If some of our doubting or careless members could accompany me on a trip of this kind and see for themselves what great amount of good our Order is accomplishing in relieving distress and cheering the closing hours of many of our brothers, it would have a tendency to change their ideas very materially. This latter brother is suffering from paralysis of both legs, brought about by injury to his spine caused through his heroic efforts to save a small child from being run over by the engine he was firing. Knowing the impossibility of being able to stop, he slid down on the pilot just in time to save her from being killed, but in saving her life he is now affected as above mentioned.

When in Ionia I held a meeting with the members of Lodge 431, which was fairly well represented. With the several contemplated changes which are about to take place and their intention to strictly adhere to the Constitution in the future, I believe this will be one of the banner lodges in Michigan within a reasonable time.

On going to West Bay City I was pleased to meet so many members of Lodge 152, and from their reports to learn that their lodge is in such a good condition. It was also a surprise to learn that a final withdrawal has not been granted in five years. Surely this is a record that they have good reason to be proud of, and an example for others to follow.

At Detroit I had the privilege of meeting with Lodge 508 in regular session and witnessing an initiation which was carried through in a very impressive manner. This lodge has elected a very efficient set of officers and is all that can be desired. Visiting brothers to Detroit can spend a pleasant and profitable evening at this lodge's regular meeting.

By request I attended the annual picnic of Lodge 221 and Division 240 held in Tashmoo Park on the St. Clair River. As usual, it was well attended and a great success both socially and financially. If more of these union meetings were held in the same spirit as this one it would be the means of promoting a feeling which should exist between the two organizations that are so closely allied together, and whose interests are identical.

E. A. BALL.

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The Question of Jurisdiction, or a Victory for the Open Door

By C. W. Maier, Third Vice Grand Master

There is now and then a question that should be discussed, for the benefit of those who may read or know about it. Though it is a delicate matter to touch upon, and one which is liable to cause some discussion, no matter how presented. I wish to refer to the *Open Door* policy of the Brotherhood of Locomotive Firemen, which means the right of our organization to represent its engineer members in matters of grievances before railroad managements.

That various efforts have been made by our sister organization—the Brotherhood of Locomotive Engineers—to have the "closed door" policy put in force and effect is a well-known fact, several attempts having been made during very recent years to have railroad companies adopt such a rule.

To my knowledge the Engineers' committees have tried to get the closed door policy established on the M., K. & T. Ry.; Wheeling and Lake Erie; Southern Pacific, east of El Paso; New York, New Haven and Hartford, and the Great Northern and Northern Pacific Railways. The last two roads named have made perhaps more history for the Brotherhood, particularly the Northern Pacific, than any other road or roads in this country during recent years. When the Joint Protective Board of the Northern Pacific Railway met in St. Paul, Minn., early in the month of July of this year they were notified by the management that in future all cases of engineers would be handled by the Brotherhood of Locomotive Engineers' committee. This announcement came as quite a surprise to our Board, who, very naturally and emphatically objecting to a new rule of this kind, called upon the Grand Lodge for assistance. Grand Master Hannahan ordered me to St. Paul, and I arrived in that city on July 12th, and on meeting with our Joint Board found that they had already held several conferences with the management, but made slow progress, owing to the operators' strike, which took place during the time that our Board was in session. Everything was said and done by the Joint Protective Board on the Northern Pacific Railway that could be done with a view to securing an amicable adjustment of the matter, but to no avail. The most able argument which, in my judgment, has ever been submitted on the "open door" question was presented by Bro. H. B. Smith, General Chairman of that system, who was complimented by the management on the clear, forcible and capable manner in which he presented his case. The following is the argument submitted by Bro. Smith:

"Concerning the question of the firemen's committee representing their engineer members, we wish to say that the recognition of our organization and the privilege of representing an aggrieved member employed in engine service, either as engineer, fireman or hostler, is one that we have enjoyed ever since the Northern Pacific has been in operation. In order, however, that there may be no misunderstanding as to our position, we will state that we are not attempting to make any schedules regulating the wage rates or other conditions governing the employment of engineers, except those in yard service. We simply claim the right as employes, and as an organization, to be recognized in handling the individual cases of our members who feel that they have a grievance, whether they are running or firing engines, or hostling; and in doing so we are only asking for the same rights and privileges that are granted to other employes who are members of similar organizations.

"The members of the Brotherhood of Locomotive Engineers employed on this road—or, rather, a portion of them—have taken some exceptions to our rights in this respect. That this exception is not of recent date is well known to officials and others connected with the road, as the matter has already been discussed before former general managers, who, realizing the justice of our position, declined to concede the demands made by the engineers, and on this point we can refer with much satisfaction to all former general managers who have been connected with this road since 1897; and not until recently have we had any intimation of a contemplated change in the past practices of the company, and that it was proposed to concede the demands of the engineers.

"If this is the position of the company we can only come to one conclusion; that is, that you have been deceived as to the object and the effect it would have on the members of our organization, and do not thoroughly understand the situation.

"It has been stated that the strained relations between the engineers and firemen on this line have reached a point where it has interfered with the company's interests. On this point we have every reason to believe that reports have been greatly exaggerated. But be this as it may, we can not accept the responsibility for the existing condtions, and do not think we should be made to suffer for the unwise and unfair acts of others. If the company has in any manner suffered, we feel that it is because it has allowed itself to be drawn into this matter without becoming acquainted with the true state of affairs, and the results which would eventually follow. In our judgment this matter would have corrected itself had the company remained neutral in the first place, and not encouraged the engineers by taking any part in the personal affairs of either organization, but had simply stated to the engineers that they were dealing with their employes through their various organizations, and would continue to do so as long as they continued to conduct their affairs as honorably as they had done in the past, and that any personal differences that existed between any classes of their employes would have to be settled between the employes themselves.

"It has also been stated that the company was collecting evidence or information on this subject, and we fear that you have been led to believe that the firemen on this system have been aggressive and guilty of insubordination. Is it not

W. T. Wiechert, 191 H. D. Twombly, 128 R. R. Montgomery, 292 T. P. Gorman, 443 J. C. Riddell, 320 W. L. Foster, 133 J. W. Barclay, 192
J. J. Morrow, 639 F. G. Cleveland, 35 H. B. Smith, 519 Chairman C. W. Maier Third V. G. M. D. Wood, 82 Sec.-Treas. C. A. Beebe, 194 Vice Chmn W. D. Dahlburg, 407

JOINT PROTECTIVE BOARD, NORTHERN PACIFIC SYSTEM possible that these reports have, in a great many cases, been somewhat overdrawn? We believe that they have been, and we base our opinion upon the fact that we have carefully inquired into this particular matter on every division of the system, and we have not remained entirely within our own ranks while collecting this information.

"After receiving so many statements from various sources to the effect that the firemen on this system are performing their duties in a most satisfactory manner, we can not believe otherwise than that a great deal of influence is being brought to bear upon your office that is calculated to prove detrimental to the interests of our organization.

"A great deal of the responsibility for the present conditions rests with some of the engineers in the employ of this company. For a number of years they have been attempting to take away certain rights and privileges that legitimately belong to the firemen, and apparently are using their influence, officially and otherwise, to promote the interests of their organization and retard the advancement of the Brotherhood of Locomotive Firemen; and, being unsuccessful with the measures they have already used, they are now resorting to coercion, and soliciting the assistance of the N. P. officials in compelling engineer members of our Order to become members of the Brotherhood of Locomotive Engineers.

"The engineers may, or possibly have already, stated to you that they do not attempt to force any engineer into their organization, but in refutation of that statement we quote to you the following from their Grand Lodge constitution, which can have but one meaning:

"Section 27, page 27, of the engineers' constitution reads:

"All candidates before being initiated into the Brotherhood shall fill out an application for one or more policies in the B. of L. E. Mutual Life and Accident Insurance Association, providing they can pass the necessary medical examination and are not more than fifty years of age.

"If a member of any other labor organization, he may be balloted for, and if elected he may be initiated with distinct understanding that within ninety days after his initiation he must show satisfactory proof that he severed all connection with all other labor organizations, under penalty of expulsion. Any subdivision failing to enforce this law shall have its charter suspended by the Grand Chief Engineer.

"Section 39, page 30, reads:

"No member of this organization who is in actual service shall be allowed to join any other labor organization, except the Order of Steam Engineers, under penalty of expulsion.

"This simply means that if a man desires to become a member of the B. of L. E. that he must sever his connection with the B. of L. F. and give up an insurance, as well as other protective features, for which he has been paying for a number of years, and which is recognized as one of the best in this country today.

"It may be said that they are not compelling their men to withdraw from the firemen, but we know to the contrary. We have been informed of numerous cases throughout the country where they have served notice on engineers who were members of both organizations to withdraw from the Brotherhood of Locomotive Firemen, under penalty of expulsion from their order. Is this in accordance with American principles and American ideas of liberty? We think not. Would you consider it a fair proposition if the B. of L. F. made a demand upon this company to the effect that you compel every fireman employed to become a member of our organization as soon as he had served six months as a fireman? Such a demand would be entirely out of reason, but in our estimation no more so than the conditions the B. of L. E. are trying to make effective on the Northern Pacific System.

"Some few years ago the Brotherhood of Locomotive Engineers adopted a law that was intended to bring about, all over this country, just such a condition of affairs as they are now attempting to secure on the N. P. road, and for the past two or more years they have been harassing the firemen on this system by circulating erroneous statements, and using methods to accomplish their purpose which we would not consider a credit to any organization.

"Although we have quietly submitted to these impositions in the past, we feel that the time has now arrived when we should present our side of the controversy, and if necessary let the public, as well as the members of other labor organizations, know of these unfair encroachments upon our just rights, and why we are forced to assume the position we are now taking.

"Our organization has no quarrel with the Northern Pacific Railway Company; neither do our members employed on this system desire any difficulty with the engineers. All we want is to be left alone, and be allowed the privilege of attending to the affairs of our members, the same as we have always done in the past. We have never interfered with the affairs of the engineers in any way, neither are we attempting to do so now, and our position during this entire controversy has been purely a defensive one. We are simply endeavoring to retain our rights as employes, as an organization, and as American citizens. Are you going to deny us the right to do so?

"One noticeable feature in connection with this matter is the fact that in addition to the two hundred and thirty-five, or more, engineer members of our Order employed upon this system, there have been a number of other engineers who have informed us personally that they were not in favor of the action of the Brotherhood of Locomotive Engineers on this question, and have said that they considered it unnecessary and uncalled for.

"Our engineer members have the privilege of withdrawing from the B. of L. F. and joining the B. of L. E. at any time they desire to do so. We do not compel firemen to join the B. of L. F. Neither do we propose to compel them to leave us after they have become engineers. That is a matter that should be left to the choice of the members themselves, and as long as they prefer to remain in our organization we are bound to extend to them all the protection (financially and otherwise) that is within the province of the organization.

"We can refer you to all of the leading roads in this country, where the firemen are enjoying the privilege of representing their members before railway officials, if employed in any capacity in engine service. Is the Northern Pacific Railway going to be an exception to the general rule?

"Are you going to adopt the closed shop policy? Have not the business affairs between the company and the Brotherhood of Locomotive Firemen been honorably conducted in the past? Have we ever taken any undue advantage or resorted to any underhand methods in handling our affairs? We think not. Then why this discrimination? Why make an exception of the firemen? Are we not entitled to the same consideration as other employes? You recognize the Order of Railway Conductors in adjusting the individual grievances of their members in every capacity of service, except official positions. You meet the representatives of the Brotherhood of Railway Trainmen on cases of their members, whether employed as brakemen, conductors or yardmen. That is all we desire, and we do claim that right without any discrimination or interference on the part of others.

"For the past two years the B. of L. E. has been vigorously advocating the open shop policy. Is there any element of the open shop policy connected with this movement? We fail to see it. They are requesting the company to do something that is contrary to the doctrine they are advocating. Is the Northern Pacific Railway Company to become allied with the B. of L. E. and proclaim for the closed shop policy, with special restrictions which are applicable to the Brotherhood of Locomotive Firemen only? Has it reached a point where we are denied the right to belong to an organization of our choice, and forced to join one in which we have no property or other interests? Why not adopt the same arbitrary measures as to our politics and our religious beliefs? Could it be more unfair or unjust? Has the time come when we as American citizens shall be dictated to as to what relief and protection we shall provide for our aged parents, our wives or our children? Are they not as dear to us as yours are to you, or those of the engineers are to them? We hope they are.

"Is it because the engineers are so anxious to take up our grievances, or that they are particularly interested in the future welfare of ourselves or our families that they are making this demand? We can not believe so. The indications are that the idea emanated from a few who were actuated by selfish motives, possibly not realizing the enormity of its injustice or the effect that would follow.

"It is claimed by the B. of L. E. that they are the parent organization, and by reason of such parentage the firemen should be entirely subordinate to them, and only subject to secondary consideration.

"We were never until recently advised as to our parentage as an organization, but if this be true, we hope for immediate deliverance from a parent whose teachings are so remote from justice and freedom. We much prefer to remain orphans.

"The property interests of this country are protected by our Federal laws and our Federal Constitution, and the term freedom does not simply mean being outside of prison walls, but it means the right to enjoy the liberties and privileges accorded to us by the laws of the land.

"We have a property interest in our organization; our families have the same property interests; and the right to represent our members before a railway management comes to us as a compensation for the money invested, in the same manner as dividends are paid to stockholders of any other institution; and to deprive us of that right would be unjust discrimination.

"Law has the power to prevent unjust discrimination between individuals, as well as in other matters, and as this is the most unjust discrimination that has ever been proposed in the history of organizations, we believe that the law has the power to interfere and prevent its being practiced on this railway system.

"There is at present a bill pending in Congress known as the Esch-Townsend Bill, in which it is proposed to take the rate-making power of railway transportation companies out of the hands of the railway officials and give that authority to the Interstate Commerce Commission.

"That the railway companies are opposing this bill goes without saying. Strong argument has been presented by the president of the Northern Pacific Railway Company and others, giving reasons why this bill should not become a law. It is claimed that such a law is unnecessary, unjust, and un-American; and it is stated that the men who have invested their money in railways should have certain rights in regulating their affairs to properly protect their interests.

"Compare the position of the railways on this question with the position of the B. of L. F. on the matter of representation. Could there be any two questions more closely identified in comparison with their positions? If their position is correct, then the position we are taking in this matter must be absolutely so, and we can not see how it can be denied.

"We believe the movement to prohibit us from representing our engineer members is entirely unnecessary, as well as unjust and un-American.

"First. Unnecessary because the firemen have never in any one single instance on this system made any attempt to interfere with the affairs of the engineers. If the B. of L. E. had devoted the same time and energy in advancing its own interests as it has in opposing us in this matter, it would be unnecessary for us to be taking up your time with this subject today, as it would have placed that organization in a position where the men would seek to become members, instead of having to be coerced into accepting membership therein.

"We do not claim a perfect organization, or that the firemen on this system are free from errors. They are, as other human beings, liable to mistakes, both as to their actions and statements. We do claim, however, that on some matters we have been unjustly criticised; but for the sake of harmony we have allowed such matters to pass by unheeded. There is plenty of room for both organizations, and no doubt they will find plenty of cases for adjustment.

"It is simply a case of the right of a man to choose what organization, if any, he shall belong to, and that he be the judge as to who he shall be represented by. Could anything be more in keeping with the spirit of fairness and justice?

"Secondly, it is unjust because it is discriminating against our organization, and denies us the recognition and privileges granted to other employes. It also deprives ourselves and our families of the protection which comes to us through our membership. It would also result in placing a great many men at a disadvantage by having no redress through any organization where on account of business fluctuations they may be advanced or reduced in rank temporarily, as in a great many cases men are promoted for a short time and then go back to firing, which conditions frequently continue for a number of years.

"It is un-American, because it takes away the rights of our members as American citizens by denying us the right to handle and regulate the affairs in which we have a property interest, and places an obstacle in our way for the highest success, freedom and future protection of ourselves and those dependent upon us.

"Freedom to think and act is the first prerogative of man, and according to the Declaration of Independence it means freedom for others as well as for ourselves, and we boast of our laws because they guard our interests and our liberties, not because they interfere with them.

"Every man should be free to enjoy the exercise of the principles of justice and right, and if his ideas or actions are wrong, they should be corrected by precept and example, and not by coercion. Right and not might should prevail.

"In conclusion, we wish to state that we regret very much that this question should have been brought up on this system, for there is nothing that could be touched upon in connection with our organization that our members are so sensitive to as the matter of representation.

"We have no desire to create any ill feeling against the Brotherhood of Locomotive Engineers, or cause any friction between the officials of this company and our members who are in their employ; but our laws are plain, and the instructions received from those we represent are very positive, and it is believed that the time has arrived when we should define our position, and endeavor to prevent such encroachments upon our rights as are now being attempted.

"In assuming this position we trust that you will give us credit for being sincere and honorable in this matter, and desirous only of guarding the interests of those we are in duty bound to protect.

"You have in your employ as true and conscientious a class of enginemen members of the Brotherhood of Locomotive Firemen as are on any line of railway in this country. They want to be right and honest with you. They want to be encouraged, however, with the assurance that they have in the officials of this road men who will give them the recognition they deserve, just so long as they come to you in an honorable way and appeal for what they believe is just.

"You now have our position on this matter. We hope that we have made it plain enough so that there can be no misunderstanding. It is not a matter of sentiment; it is a plain business proposition, based on business principles. We therefore request your earnest consideration on this matter, and trust that it will result in a continuance of the past policy of the company, as well as of the friendly relations that have heretofore existed."

This argument, while weighty and convincing, did not bring the desired result, and the entire matter was turned over to me. A meeting was held by the Board and myself with the management on August 24th, at which time I presented the matter to Mr. Horn, general manager, and Mr. Van Alstyne, mechanical superintendent, as follows:

"This is the first time that I have ever had the pleasure of meeting you gentlemen, and while I would much rather have met you under other conditions, still, I would prefer to meet you even under the circumstances responsible for my presence here than not to meet you at all.

"I feel quite confident that if we were better acquainted with each other, it might have some bearing on the case at issue, because you would then be assured by experience, of my determination to deal fairly with all parties interested. I recognize fully the fact that each side in this controversy has rights that the other is bound to respect, and which must be mutually respected if harmony is to prevail on your road. Harmony between employer and employe is essential to the success of any enterprise, and any lack of confidence that may exist between them is sure to prove detrimental. I appreciate the fact that you are in charge of extensive property interests and that the stockholders of the Northern Pacific Railway look to you for results. I want you to feel that I myself occupy a similar position, and while I represent only about nine hundred or a thousand of the men employed on your road, I also represent fifty-six thousand men, whose combined property interests are eighty-four millions of dollars, and that if I make a mistake in effecting a settlement with you, all that I represent will suffer on account of it. Therefore, with so much at stake we can not afford to quarrel. I feel that there should be no secrets between us and that we should have a heart to heart talk, not alone on this question, but as well on any and all matters in which the company and the enginemen that I represent are mutually interested. In what I am about to say it will be my purpose to make no statement that I can not verify. I have nothing to conceal, no trump card to play, and only sound reason, good logic and well established precedent to place before you, and I am firm in my opinion that when my argument is concluded we will reach a speedy and satisfactory settlement.

"I would rather that you and our Board had made such a settlement and have thus obviated my presence here, but it seems that a lack of mutual confidence so indispensable to such an end was responsible for your failure to do so.

"Now that you gentlemen have agreed to disagree and the matter has been turned over to me, I want to assure you that when we are through with this conference if we have not reached an agreement satisfactory to both the company and the Board, it will not be because I will not have done my duty in trying to produce such a result.

"There is no question that I have to deal with that is as delicate as the representation question. It is one that can, I believe, bring on serious trouble more quickly than almost any other.

"When you strike at the individual rights of a man, that man is going to resent it with all the power and vigor of which he is capable. Our members have known for years that slowly and gradually their personal rights were being encroached upon and if at any time during your conference with their representatives you observed that the members of our Board were agitated, you may know that it was because of the fact that there appeared to them the possibility of their losing a moral and legal right which, from the beginning, they have enjoyed and exercised uninterruptedly, and also that this matter having been a bone of contention on your road for some years past, our members having about reached the limit of their toleration, can not be blamed for taking the position regarding it which they today occupy.

"Some five years ago, says Past Grand Master Sargent in his last biennial report to the Chattanooga Convention, 'the rumor was afloat that the engineers on the Northern Pacific Railway were going to handle all grievances of engineers on that road, but that in a conference with General Manager Kendrick, who was in charge of the Northern Pacific property at that time,' he (Bro. Sargent) was assured that he (Mr. Kendrick) 'would not be a party to such an agreement.'

"While the representatives of the Brotherhood of Locomotive Engineers on your road have never secured the exclusive right to handle all cases of engineers, they have kept up such a persistent effort to accomplish that end that we find ourselves now confronted with the necessity for having this very unpleasant controversy settled definitely and permanently. We did not start this strife; it was brought to our camp and we find ourselves compelled either to resist the attack or surrender certain rights guaranteed by the Constitution of the country we live in, one of which is to belong to any labor organization in which our membership is acceptable and agreeable to ourselves or to refrain from doing so as we may choose. This matter in my opinion could be settled by the engineers and firemen themselves were the engineers disposed to be fair. It seems, however, it can not be done that way, but must be fought out before the railroad managements of the country, and some of them seem to encourage the fight. Permit me to give you an example of what occurred on last Monday morning in a joint conference between representatives of the engineers and firemen. These joint conferences have been meeting for years. When the chairman of the engineers' committee called the meeting to order, he addressed the firemen's committee by saying, 'Gentlemen, have you any members of your committee that are engineers, and have they had more than six months' experience as runners?' The firemen's Chairman said, 'We have one runner on our committee and I will explain his case to you, and it is for you to say whether he is eligible to sit with us or not.' The explanation was agreeable to the engineers. Then came the statement that the engineers' committee was going to ask their management to insert a clause in their schedule that would give them the right exclusively to handle all cases of engineers' grievances regardless of what they belonged to. The firemen's Chairman took the floor and explained the position of the firemen on the question, and that they could only agree to certain points in regard to representation. No sooner had the firemen's Chairman concluded his remarks than the Chairman of the engineers' committee took the floor and in the attitude of an absolute ruler said, 'Gentlemen, we are going to represent all the engineers on this road,' and with this he brought his gavel down with a rap like a thunder-bolt. That is the rock that they split upon. I will ask you in all honesty, as a general manager, if you were a member of our organization if you would be intimidated in any such manner? I feel safe in saying that you would fight as long as there was a drop of honest blood in your veins. Now, can you blame us for the stand we have taken?

"It is my opinion that if the engineers had used a little judgment and approached the firemen in the right spirit this matter could have been settled between the parties directly interested instead of having it brought before the management of a railroad that has been fair, courteous and kind to both sides. This kind of work is to be deplored, but we can not help it and wash our hands of all responsibility for it.

"I do not want to impress upon your mind that we have any personal feeling against the Brotherhood of Locomotive Engineers' organization in any manner. The firemen have always been their warmest and staunchest supporters when they have been in trouble, and we are here to say that we will continue to support them when they are right, but when they attack our interests we propose to defend those interests by every honorable method we can command. To prove to you our past attitude towards the Brotherhood of Locomotive Engineers I will quote a resolution that was adopted at our convention held at Philadelphia in 1885:

"Resolved, That it is the sense of this convention, that we do all in our power to create and maintain a harmonious feeling between the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen. (Adopted.)

"This is absolutely the only law of any kind that has ever been enacted by our Brotherhood regarding the engineers' organization in any way, shape or form. We want it understood that we in no sense dispute the right of the engineers' committee to handle the grievances of any and every engineer who desires them to do so, regardless of whether they belong to a labor organization or not, but we do want it understood that we will contest every inch of ground for the right to represent one of our engineer members who may request us to seek the adjustment of his grievance. We do not object to our members taking their troubles to the engineers for adjustment if they see fit to do so. We offer absolutely no opposition or discouragement to any member of the Firemen's Brotherhood who may be running an engine and wishes to join the engineers' organization. If they are square on our books the final withdrawal card will be granted if asked for in person or by communication. One thing sure, we are not going to drive our members from us; they must be left to choose for themselves without hindrance from any source whatever. I want to go on record as saying that the Brotherhood of Locomotive Firemen have no standing Engineers' Protective Boards. Neither do we ask you to make an agreement with us at this time requiring the creation of such. We have permanent Protective Boards that represent locomotive firemen, and while we do not want two standing committees we do want representation for our engineer members. Our organization has a law which says that there may be engineers placed on their Protective Boards, and should any engineer feel aggrieved, he may place his grievance before the lodge in writing, and if it is believed there is merit in the case engineer members of the Board will be given authority to make investigation and, if possible, secure its adjustment. In the event of failure to make a settlement they will report back to the lodge, and if in their judgment the party has no complaint, and that he has not been unjustly dealt with, the case is closed and the matter dropped; but should the consensus of opinion be that there is merit in the case all papers will be forwarded to the General Chairman for his decision and action. If, from a review of the evidence and circumstances, the Chairman decides it is a case for higher authority to act upon, he will take the matter up and endeavor to have it adjusted. Should he fail and the decision is not satisfactory, he may appeal the case to the highest authority in our organization, when final effort will be made for a settlement. Should the General Chairman find it necessary to go to the point where the trouble originated to begin his investigation, he will consult with those who handled the case, and if it can not be settled locally, may, if he sees fit, have one of them act with him in his future efforts to secure an adjustment. In any event only three can handle it in the beginning, and if it must be appealed, only one can go with the General Chairman, which cuts the representation to the minimum. Our reason for wanting the engineers represented locally by three is for the good of both the company and the men. Should we have only one to represent him before the master mechanic or division superintendent, and the member did not get his trouble adjusted to suit him he would have more complaint to make against one representative than if three were present. Such a course saves much trouble to both the men and the management. If we have a committee of two and they are equally divided in their opinion, we are again confronted with a difficulty. After it passes local hands, only one local engineer can at any time take up with the General Chairman the grievance of an engineer. Whenever the case is disposed of the representatives make a report. The same is filed, and they are discharged as such. Each individual case is handled separately. In this way we are saved the necessity of creating or keeping a regular engineers' committee, something we never had and do not want. I will try and make this plain to you by citing a hypothetical case. Say that at Missoula, Mont., James Brown, one of our engineer members, felt aggrieved at the company. He made out his grievance in writing, setting forth his trouble. The meeting selects enginemen in his class who investigate, and make an effort to adjust Engineer Brown's case, providing there is merit in it. If they are unable to settle it with the division officials, then the lodge turns it over to the General Chairman, who, if he sees fit, can take one local representative on the case, or can go alone and after taking the grievance to the highest official on the road, and being still unsuccessful, can then call upon the Grand Lodge for assistance. Now, this is the way we handle the affairs of our engineer members and it works to the entire satisfaction of all concerned. I have tried to make myself understood, and hope you will agree with me on the insertion of the following, viz., "except in the case of an engineer, who may be represented by enginemen of his choice and selection, in the same class of service."

After three hours' argument pro and con it was agreed that another conference should be held in the general manager's office, at which time Grand Lodge officers of the B. of L. E. and B. of L. F. were to be present. The situation having by this time assumed a serious aspect, I wired Bro. Hannahan to come at once, which he did, and arrived in St. Paul on August 26th and at 3.00 p. m. same date had an audience with Mr. Horn, general manager of the Northern Pacific, during which the situation was gone over in detail. While it was intended to have the engineers present at this conference, the management decided to meet Bro. Hannahan and our Board first, and we were then, for the first time, informed as to what the engineers wanted relative to representation. Mr. Horn, the general manager, said that on July 14, 1904, the engineers' committee requested that the following be inserted in their schedule: "No committee representing a labor organization shall be received by the management for the purpose of adjusting an engineer's grievance except the B. of L. E. committee." To this the management would not agree, but did in turn submit to the engineers' committee a proposition as follows, viz., that "the only committee that may adjust engineers' grievances or legislate for engineers will be the engineers' committee who shall, if requested, take up proper cases of all engineers, but any engineer may take up his own case personally and may, if he so elects, have an engineer assist him." While this rule was not worded like the one the engineers requested, it was not agreeable to us. The next step, therefore, was to hold the conference in the general manager's office, which had been agreed to and in which Grand Lodge officers of both organizations should participate. Accordingly Grand Master Hannahan, accompanied by our Board and myself, and Grand Chief Stone, of the B. of L. E., accompanied by his committee, met as per arrangement in the office of General Manager Horn. The question of representation was again thrashed out and when the conference came to a close nothing in the way of a settlement had been accomplished. Just before its conclusion, however, General Manager Horn suggested that the two organizations again come together and try to reach an agreement amongst themselves. This was decided upon, and accordingly on August 29th a five hours' session was held in the Foley Hotel, during which the entire situation was gone over, Grand Master Hannahan declaring himself in strong terms to Grand Chief Stone relative to the position he (Stone) had taken in this matter. Bro. Hannahan insisted that we should have the "open door," that our engineer members should have the same right to be represented by the same number as those of the B. of L. E., and that while anxious to accomplish the permanent establishment of the moral and legal rights for which we were contending by peaceable methods he would, if forced to it, use the strongest and most formidable weapon at his command, viz., the strike, rather than yield to the injustices sought to be imposed on our members, and then inquired of Mr. Stone as to what his (Mr. Stone's) position would be in the event a strike were declared by our Brotherhood. I will quote the exact words used by Grand Chief Stone in replying to this question. Mr. Stone said, "That is about the fourth or fifth time that question has been asked, and so as to make it a matter of record I will answer it. Mr. Hannahan tries to make plain it is not a fight on the engineers' organization, but that it is a fight on the company. At the same time all you gentlemen realize the company does not care a continental whether the B. of L. E. or the B. of L. F. handles the grievances of the engineers. If that organization have the majority they would just as soon you would handle them as for us to do so. So that is only put in as a blind. The fact remains you are not fighting the Northern Pacific Company, you are fighting the

Brotherhood of Locomotive Engineers, and while I want to keep just as far away from a fight as possible, I want to put myself on record so plainly that you gentlemen will understand it. If you force this issue with us, as you seem determined to do, I will say to you frankly, we will do everything possible to keep the wheels turning on the Northern Pacific Railway. That is our position, but I hope we will not be forced to it. I do not want to fight, but if I do have to fight it is going to be a fight to the death." To Grand Chief Stone's declaration, Grand Master Hannahan replied as follows: "I want to say to you as Grand Chief of the Brotherhood of Locomotive Engineers that your men will not sustain you in such a course. If that is your position your days are short as an executive of that organization. We will enter into combinations that will protect our men. You will find that you can not afford to take that position. There are hundreds of your men who will not stand by you if you attempt it. Go before your men on the declaration you have made here and see how many of the members of your organization will be in touch with you."

Bro. Smith, General Chairman of the Board, also replied to Mr. Stone by saying, "One statement I did not clearly understand. You say we have forced this on you. We have not forced this on the engineers of the Northern Pacific Railway Company. We have not asked the company anything in regard to this matter at all. Nor have we asked the engineers. We are trying to defend our rights as employes and as an organization and are not trying to 'force' anybody. On the other hand the engineers are trying to force our organization out of business, as far as the protection of its engineer members is concerned."

Shortly after this talk took place the conference with the engineers' committee ended without any results. As we could not agree upon a rule that would be fair to all concerned, the management was notified of the same, and the following day Bro. Hannahan and our Board called upon Mr. Horn and had another conference with him. By this time matters began to shape themselves more favorably to a peaceable settlement. I will now go back to August 14th, when the Great Northern Joint Protective Board met in St. Paul, as they also took part in a similar controversy. The engineers and firemen had an affiliation between themselves, having formed the same some years before and it was the custom of their representatives to meet jointly when schedules were up for consideration. When the Great Northern Joint Board was through with its work, a communication was sent to the engineers' committee asking for an audience, which was granted, and on August 18th both committees met in joint session. The engineers' chairman asked if the Firemen's Board had amongst its members any engineers of more than six months' experience as such. The General Chairman of the Firemen's Board, Bro. Cochran, explained the situation as to one of the members of the Board, which was satisfactory to the engineers' committee. The next move on the part of the engineers was to notify our committee that they were going to request of the management a rule "that only the engineers' committee could adjust grievances of engineers," and upon this point the two committees divided. A motion was made and seconded by the engineers to dissolve the affiliation; the same was put and carried. However, the engineers' chairman, Mr. Ryan, gave the firemen's committee to understand that they (the engineers) were going to handle all cases of engineers on the Great Northern road, and to emphasize his remarks he brought his gavel down with a rap that was doubtless calculated to strike terror into the hearts of the B. of L. F. representatives present. The dissolving of the affiliation had, however, no effect upon the standing of the joint agreement, as the company had something to say about that, and as all three had agreed to it when first formulated, it, of course, required the action of all parties to the agreement to accomplish its dissolution. Any one of them could refuse to comply with its provisions, yet, it would still be binding on all concerned. The firemen notified the company of what had taken place, and also that as they had no grievances they were ready to adjourn and go home, providing that the matter of representation, which had been so long in vogue on the road and was satisfactory to the firemen, was not molested. The Great Northern management assured our Board that every employe would be accorded a fair deal on their line, and that as the affiliation had been broken it was best to make separate schedules for the engineers and firemen. This was agreed to by the firemen, but not until a good rule defining representation was given the committee. This new rule and that established by the Northern Pacific, the nature of which will be disclosed further on, are the best that it has ever been my privilege to see and gives us the wide "open door," what we have always contended for. It reads as follows:

"*Mr. Wm. Ryan, Chairman Engineers' Committee, Hotel Foley, St. Paul, Minn.; Mr. J. A. Cochran, Chairman Firemen's Committee, Hotel Foley, St. Paul, Minn.:*

"Dear Sirs—Referring to our various conferences in regard to representation of employes in engine service by your various committees. The dissolution of the affiliation heretofore existing between the engineers and firemen employed by the company having made necessary the preparation of separate schedules for engineers and firemen, and such schedules having been agreed to, statement of the company's position in the matter of representation of employes will help you in handling the cases coming before you.

"Any matters affecting the rates of wages of engineers or their standing on engineers' seniority list or the rules concerning their employment as engineers requiring attention by the company's officers, will be handled by the individual concerned, or by the engineers' committee, and similarly, matters affecting the firemen will be handled by the firemen's committee, but any matter affecting the personal relations of any employe with the company, whether in the nature of a grievance or otherwise, may be handled in accordance with the personal preference of the employe concerned; the company reserves to itself the right to secure the information necessary to enable it to justly determine matters at issue, from any source available, and it can not undertake to limit the line of its investigation to conferences of certain committees or individuals.

"The company expects to leave to the individual determination of its employes the matter of their affiliation with the different fraternal and other trades organizations. Yours truly,

"(Signed) F. E. Ward,
"*General Manager.*"

This rule gave to our Board what they desired and at no time was it necessary to call a Grand Lodge officer to accompany them in their meeting with the Great Northern management in effecting this settlement. Fair dealing on the part of General Manager Ward of the Great Northern Railway has been one of his recognized characteristics for many years and one with which his action in this particular is fully in keeping. This settlement on the Great Northern had its effect in bringing about a settlement on the Northern Pacific.

It was plain to be seen after hearing the records read on the representation question in the general office of the Northern Pacific Railway that for years, and long before Mr. Horn became general manager, matters were so shaping themselves that it would only be a question of time until an effort would be made to deprive the firemen's organization of the right to represent their engineer members on matters of grievances. Mr. Horn was honest in his dealings with us, and while in the beginning was against us, we were satisfied that he was only carrying out the policy that his predecessors had shaped for him prior to his promotion to the position of general manager.

The engineers in their contention claimed that we were encroaching upon their rights and if let alone would soon crush their organization out of existence. There was nothing that we could say that would convince them otherwise, not even after reviewing the past record of our Order, wherein we pointed out that on several occasions we had sacrificed everything to help them when they were in trouble. We told them that we had no desire to harm them in any way, but our assurances were all in vain, for if they believed what we said at no time did they acknowledge it. Bro. Hannahan put Grand Chief Stone on record. We have Mr. Stone's statement wherein he says that he would do all he could to keep the wheels moving if we forced the issue on the Northern Pacific Railway. This was the first public declaration of its kind that I ever heard the executive of a labor organization make to the effect that he would help capital out, in the event of a legal strike being ordered by another labor organization. Some members of the Brotherhood of Locomotive Engineers may imagine that such a policy will prove advantageous and applaud the action of their Grand Chief in inaugurating it, but I am of the opinion that a vast majority of the rank and file, not only of that Brotherhood, but of all organized bodies of wage-earners as well, will hold an emphatically different view. If the Brotherhood of Locomotive Firemen were trying to make contracts for road engineers or in any manner endeavoring to embarrass their organization in its work there might be some reason for their taking such a stand. The policy of the Brotherhood of Locomotive Firemen has not changed one particle in all these years. We advocate the same policy today that we always did. The question arises in my mind if this strife is kept up will it not sooner or later bring disaster to both organizations? Should it ever come to that it will not be the fault of our Brotherhood. We did not start it, it has been brought to our camp, and has been a long time in coming, but it is here and there is nothing left for us to do but contend for the right and defend the interests of our engineer members regardless of cost or consequences. The members of the Brotherhood of Locomotive Firemen can congratulate themselves on the fact that they have in Bro. Hannahan a Grand Lodge officer that never in his life said that the "wheels would be kept moving" when a sister organization was in trouble with a railroad company. Mr. Stone in our conference with him declared that he had gone a great way in making concessions to us. I want to say that he did nothing of the kind—he made no concessions at all. The engineers' committee asked the company to receive and recognize a committee from that organization only in the presentation of an engineer's grievance and to this the company would not agree, and the proposition the company made to our Board with a view to the settlement of the matter was not prompted by the engineers in any way. General Manager Horn said to us that he himself had prepared this article and had given it a great deal of thought, and that while the engineers did not get what they wanted, it was the next best rule. This shows how far Grand Chief Stone went towards trying to make a settlement that would bring about peace and harmony between the two Brotherhoods. All we ever asked was the same right to represent our members that the engineers had to represent theirs.

On August 31st Grand Master Hannahan and committee again made another effort to reach a settlement, but to no avail, and an adjournment was taken until a later date, pending the development of certain matters calculated to exert an influence in our favor.

On September 4th our Board, accompanied by Grand Master Hannahan, had their last conference with the Northern Pacific Railway management and effected a final settlement of the representation question, the rule governing the same reading as follows:

"September 4, 1905.

"*Mr. Chas. Barrett, Chairman Engineers' Committee, Saint Paul, Minn.; Mr. H. B. Smith, Chairman Firemen's Committee, Saint Paul, Minn.:*

"Dear Sirs—Referring to various conferences in regard to representation of employes in engine service by your various committees, we will observe the following: Engineers' committee will represent all engineers in matters pertaining to rates, rules, general grievances, seniority and general matters of engineers. Firemen's committee will represent all firemen in matters pertaining to rates, rules, general grievances, seniority and general matters of firemen.

"Enginemen having personal grievances may present their own cases or be represented by employes of their own class and selection, the company reserving the right to secure from any available source such information as is necessary to justly determine the matter at issue. The intent of this is to have a personal grievance handled somewhat as follows: First, as to locally on the division, by the individual himself before the master mechanic or superintendent; or by the individual assisted by a co-employe or committee of co-employes before master mechanic or superintendent, but if not settled on the division or locally the individual may have any co-employe assist him in appealing his case to higher authority in regular order up to the general manager. By co-employe is meant a man in the same class of service. Yours truly,

"(Signed) H. J. Horn,
"*General Manager.*"

"Accepted by Chas. Barrett for the engineers' committee and H. B. Smith for the firemen's committee."

With the signing of this new rule governing representation closes the most celebrated case that has ever been contested for by our organization. There is nothing in the article but what is fair and right to both the engineers and firemen; all we contended for was a square deal, and it has been established on both the Great Northern and Northern Pacific railroads. One of the best things to report is the friendly feeling that existed between all concerned on both roads at the close of this affair. We feel that we have the esteem and respect of the railroad managements and that they have ours goes without saying. We hope that this settles the representation question for all time to come. It certainly does as far as we are concerned. While this was a tedious and tiresome experience for all participants the successful conclusion of our negotiations was fully in keeping with that spirit and policy so characteristic of our Brotherhood of establishing perfect peace in the settling of differences which leaves not even a scar much less a wound as a reminder of contention.

I want now to have a few words to say about our committees on both the Great Northern and Northern Pacific Railways, and that is they are hard to beat. Bro. Smith, General Chairman, and Bro. Woods, Secretary, of the Northern Pacific Board, are the right men in the right place, and no mistake was made when they were re-elected to succeed themselves. The following named brothers were members of the Board: H. B. Smith, General Chairman; D. Wood, Secretary and Treasurer (the former a member of Lodge 519, Duluth, Minn., the latter of Lodge 82, Minneapolis, Minn.); Bros. J. C. Riddell, Lodge 320; R. R. Montgomery, Lodge 292; J. J. Morrow, Lodge 639; W. W. Wiechert, Lodge 191; M. H. Washington, Lodge 133; W. D. Dalberg, Lodge 407; T. C. Gorman, Lodge 433; F. G. Cleveland, Lodge 35; H. D. Twombly, Lodge 128; C. A. Beebe, Lodge 194, and J. W. Barclay, Lodge 192. These brothers were always in attendance and took an active part in the work of the Board, and in the interest of those whom they represented. The greater part of my time was put in with this Board, and I feel grateful for the many kindnesses shown me by each and every member of it at all times.

The Great Northern Board was represented by Bros. J. A. Cochran, General Chairman, Lodge 224; Nels Larsen, Secretary and Treasurer, Lodge 95; David Arms, Lodge 483; D. D. Kuhn, Lodge 61; F. B. Wright, Lodge 64; C. F. Smith, Lodge 82; W. W. Linton, Lodge 93; J. B. Franklin, Lodge 296; I. J. Tightmeir, Lodge 407; C. H. Whempner, Lodge 433; B. Harmon, Lodge 456; S. Picket, A. Blomke, Lodge 501; H. M. Clark, Lodge 567, and A. B. Dawley, Lodge 571.

I have only words of praise for these brothers with whom I had the pleasure of meeting and associating while they were in session in St. Paul. The fact that I am able to announce that Bro. Cochran and Bro. Larsen were returned to their respective positions as Chairman and Secretary of their Board reflects great credit upon the good judgment of its members. That they are the right men in the right place is beyond question.

Before I close this article I want to say that General Manager Horn, of the Northern Pacific Railway, went through quite a siege and deserves great credit for the patience he displayed throughout the entire trying ordeal. Mr. Horn is friendly to organized labor, and to prove it, he wears a watch charm made from a piece of coal presented to him by Thos. Burke, of the Miners' Union, of the Western District. While he is able to wear costly jewels, should he so choose, he prizes this token from the hands of organized labor as a memento conveying a sentiment that dollars and cents can not express—a sentiment that recalls to his mind the men that toil in the bowels of the earth in order that they and theirs may enjoy the blessings of life.

In conclusion, I want to thank all with whom I came in contact and associated with while in the city of St. Paul during the sixty days I was there interested in the representation question, and I wish to make special mention of Bros. Smith, Cochran, Woods and Larsen, who extended me every courtesy while I was with them. I certainly shall not forget their kindness nor that of the other members of their Boards who so well represented their constituents. With this last line falls the curtain upon the great question of representation settled to the interest of the companies and their enginemen as well.

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Official

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information, same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

William Voygt.—Is a member of Lodge 322, B. of L. F., Dubuque, Iowa. Any one knowing his whereabouts or any information concerning him will please correspond with Charles E. Seagraves, Chicago Junction, Ohio.

Charley Buckley.—Was a member of the B. of L. F. at one time in Washington. Any one knowing his whereabouts or in possession of any information regarding him will please correspond with Charles E. Seagraves, Chicago Junction, Ohio.

George W. Gibson.—When last heard from was in southern California. Has been gone from home about three years. Any one knowing his whereabouts or in possession of any information concerning him will please correspond with his brother, F. M. Gibson, member of Lodge 642, B. of L. F., Box 297, Mart, Texas.

Thomas Nolan—When last heard from was in Marion, Iowa, which was in 1901. He is 24 years old, 5 feet 8 inches in height, light hair, light complexion and blue eyes, and weighs about 170 pounds. In 1900 he fired on the Union Pacific between Rawlins and Green River, Wyo. Any information concerning him will be thankfully received by his father, John Nolan, care C., St. P., M. & O. Roundhouse, Minneapolis, Minn., or by W. Bell, Secretary Lodge 450, B. of L. F., 691 Armstrong avenue, St. Paul, Minn.

John Rohrig.—Is a member of the B. of L. F. Is 5 feet 10 inches in height, and weighs about 175 pounds. When last heard from he was working out of Beaumont, Texas, on the G., C. & S. F. R. R. Any one knowing his whereabouts or anything concerning him will please correspond with H. T. King, member of Lodge 449, B. of L. F., 705 N. Wilhite street, Cleburne, Texas.

John F. McKear.—He became a member of Lodge 565, B. of L. F., at St. Joseph, Mo., Feb. 16, 1901. He left St. Joseph with his family during the spring of 1902 to go West for his health. Friends here heard from him for a time, but now have lost track of him. Any one knowing of his whereabouts kindly write X. T. Cragun, 312 Highland avenue, St. Joseph, Mo.

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Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possession of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the Lodge which issued same:

Traveling card and receipts for quarter ending September 30, 1905, and receipt and order for works for quarter ending December 31, 1905, belonging to O. L. Fink, member of Lodge 591, was lost in Arcade Station, Los Angeles, Cal., recently. If found please return to O. L. Fink, Grand Pacific Hotel, Salt Lake City, Utah, or C. G. Smith, Secretary Lodge 591, B. of L. F., 1229 Grandview avenue, Portsmouth, Ohio.

Traveling card No. 13,005, issued to W. J. Forbes, member Lodge 91, B. of L. F., on July 2, 1905, signed by E. C. Cron, Secretary, and F. B. Bishop, Master, and receipt for dues, quarter ending September 30, 1905, together with order for works, has been lost. Limitation of traveling card, September 30, 1905. Description: Tall, brown eyes and hair. If found please return to E. Chas. Cron, Secretary, Lodge 91, B. of L. F., 1913 Harrison street, San Francisco, Cal.

Traveling card good for quarter ending September 30, 1905, belonging to W. E. Stephenson, member of Lodge 163, B. of L. F., was lost at Parsons, Kansas, Sept. 2, 1905. If found please return to W. E. Stephenson, Galena, Kansas.

Pocketbook containing receipt for quarter ending September 30, 1905, also receipts for several years back, a beneficiary certificate, and service letter issued by the St. Louis Southwestern Railway, belonging to James Burke, member of Lodge 163, B. of L. F., was lost on August 22, 1905, at East St. Louis, Ill. If found please return to James Burke, St. Elmo, Ill.

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The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of August, 1905:

B. of L. F. Lodges 16, $12; 26, $10; 37, $5; 100, $2.25; 139, $40; 142, $5; 152, $10; 270, $10; 314, $5; 356, $5; 373, $18.25; 374, $12; 390, $5; 448, $10; 511, $5; 605, $10; 615, $10; 627, $5; 633, $4. Total..	$183 50
O. R. C. Divisions	54 50
B. of R. T. Lodges	238 89
B. of L. E. Divisions	306 50
G. I. A. Divisions	2 80
Mrs. George Shank	2 00
James Costello, Division 270, O. R. C.	1 00
J. E. Simmons, of Fitz-Hugh Luther Co., Chicago, through Division 113, O. R. C.	15 00
E. T. Payne, Lodge 477, B. of R. T.	1 00
M. M. Shirk	1 00
E. V. Ray	1 00
F. J. Bauer	1 00
T. C. Higgins	25
J. F. Smallwood	50
Robert Powell	1 00
T. E. Dupmuck	1 00
R. E. Kinney	1 00
Mr. Lockwood	75
Wm. Davidson	25
C. O. Cox	25
B. F. Evans	1 00
A. E. Jones	50
Lodge 53, B. of R. T.	1 00
G. H. Ellis, Lodge 98, B. of R. T.	1 00
J. W. Bayne	50
F. E. Ennis	$0 50
O. T. Hansen	50
W. A. Ensign, Division 85, O. R. C.	1 00
A. M. Cummings, Division 85, O. R. C.	1 00
Geo. W. Orr, Division 282, O. R. C.	1 00
Geo. Swarthout, Division 282, O. R. C.	1 00
W. E. Thomas, Division 85, O. R. C.	1 00
R. B. Lancaster, Lodge 173, B. of L. F.	50
T. A. McAvoy, Lodge 173, B. of L. F.	50
M. J. Phores, Division 134, B. of L. E.	1 00
J. F. Vance, Division 134, B. of L. E.	1 00
E. Dunning, Lodge 173, B. of L. F.	1 00
B. F. Chambers, Lodge 173, B. of L. F.	1 00
O. D. Gevengood, Lodge 173, B. of L. F.	25
Mr. Wilhelm	50
O. A. Brown, Lodge 173, B. of L. F.	50
J. E. Pillsbury, Lodge 173, B. of L. F.	50
Grand total	$829 94

Respectfully submitted,
JOHN O'KEEFE,
Sec. and Treas. R. R. M. H.

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Acknowledgments.

The following persons desire to acknowledge receipt of payment of claims and to express their gratitude to the Brotherhood of Locomotive Firemen, as an organization, and to the individual members for kindness and courtesies extended:

Mrs. S. C. Dike, Dubuque, Iowa.

Mrs. Charlie Standart and Mr. and Mrs. S. J. Standart, Kansas City, Mo.

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Beneficiary Statement

OFFICE OF GRAND SECRETARY AND TREASURER,
PEORIA, ILL., September 1, 1905.

TO SUBORDINATE LODGES:

The following is a statement of receipts in the Beneficiary Department for the month of August, 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	510 75	69	78 75	137	107 25	205	116 25	273	196 50	341	197 25	409	172 50	477	264 00	545	91 50	613	55 50
2	......	70	180 00	138	390 00	206	58 50	274	......	342	198 75	410	171 00	478	......	546	48 75	614	232 50
3	842 25	71	271 50	139	399 00	207	516 00	275	......	343	45 00	411	201 00	479	83 25	547	58 50	615	113 25
4	240 00	72	365 25	140	417 75	208	93 75	276	207 75	344	160 50	412	150 75	480	40 50	548	79 50	616	57 00
5	276 00	73	334 50	141	507 75	209	358 50	277	108 75	345	167 25	413	60 75	481	219 75	549	232 50	617	85 50
6	376 50	74	162 00	142	285 00	210	60 00	278	27 00	346	33 75	414	156 00	482	133 25	550	57 75	618	......
7	331 50	75	973 50	143	321 75	211	279 00	279	70 50	347	106 50	415	119 25	483	63 75	551	237 75	619	102 75
8	543 75	76	36 75	144	30 00	212	134 25	280	136 50	348	250 50	416	......	484	......	552	152 25	620	75 00
9	341 25	77	372 00	145	155 50	213	200 25	281	203 25	349	329 25	417	80 25	485	912 75	553	175 50	621	63 00
10	833 25	78	142 50	146	331 50	214	337 50	282	33 75	350	110 25	418	284 25	486	117 00	554	90 00	622	171 75
11	268 50	79	75 00	147	179 25	215	363 00	283	116 25	351	33 00	419	117 75	487	21 75	555	83 25	623	109 50
12	309 00	80	189 75	148	178 50	216	138 00	284	620 25	352	126 00	420	87 75	488	75 75	556	78 75	624	101 25
13	......	81	124 50	149	565 50	217	217 50	285	385 50	353	......	421	73 50	489	163 50	557	255 75	625	45 75
14	387 00	82	276 00	150	271 50	218	223 50	286	335 25	354	294 00	422	93 75	490	198 75	558	151 50	626	164 25
15	131 25	83	450 00	151	......	219	409 50	287	841 50	355	192 75	423	54 00	491	77 25	559	78 75	627	58 50
16	395 25	84	......	152	237 75	220	485 25	288	99 00	356	216 00	424	114 00	492	236 25	560	87 75	628	74 25
17	173 25	85	224 25	153	153 75	221	189 00	289	150 00	357	159 00	425	79 50	493	60 75	561	119 25	629	33 75
18	381 00	86	257 25	154	152 25	222	149 25	290	147 75	358	120 00	426	360 75	494	132 00	562	249 75	630	91 50
19	......	87	167 25	155	81 00	223	207 00	291	110 25	359	96 00	427	81 75	495	......	563	183 75	631	90 00
20	52 50	88	183 00	156	220 50	224	98 25	292	43 50	360	117 75	428	80 25	496	82 50	564	153 75	632	51 00
21	275 25	89	115 50	157	80 25	225	66 00	293	92 25	361	124 50	429	183 00	497	118 50	565	51 00	633	104 25
22	101 25	90	83 25	158	109 25	226	285 75	294	177 75	362	153 00	430	......	498	114 00	566	151 50	634	200 25
23	113 25	91	290 25	159	188 25	227	68 25	295	240 75	363	......	431	......	499	44 25	567	144 00	635	117 75
24	320 25	92	140 25	160	178 50	228	420 00	296	256 50	364	151 50	432	212 25	500	79 50	568	129 00	636	51 75
25	306 75	93	217 50	161	44 25	229	294 75	297	222 75	365	57 75	433	138 00	501	......	569	151 50	637	63 75
26	......	94	345 75	162	507 75	230	579 75	298	176 25	366	......	434	......	502	218 25	570	65 25	638	105 75
27	261 00	95	45 75	163	154 50	231	366 75	299	141 75	367	......	435	141 00	503	138 00	571	......	639	......
28	179 25	96	433 50	164	96 00	232	248 25	300	199 50	368	128 25	436	244 50	504	51 00	572	64 50	640	60 00
29	198 00	97	......	165	69 00	233	201 00	301	120 75	369	312 75	437	76 50	505	66 75	573	154 50	641	111 75
30	201 00	98	284 25	166	280 50	234	152 25	302	330 00	370	39 00	438	129 00	506	131 25	574	132 00	642	92 25
31	126 75	99	571 50	167	135 75	235	239 25	303	132 75	371	157 50	439	99 00	507	116 25	575	......	643	27 75
32	157 50	100	101 25	168	180 00	236	355 50	304	223 50	372	131 25	440	190 50	508	247 50	576	......	644	51 00
33	177 00	101	561 75	169	354 75	237	399 00	305	81 75	373	156 75	441	228 00	509	74 25	577	102 00	645	84 75
34	193 50	102	142 50	170	140 25	238	307 50	306	291 00	374	270 00	442	116 25	510	171 00	578	132 00	646	223 50
35	134 25	103	......	171	129 00	239	......	307	173 25	375	......	443	132 75	511	199 50	579	77 25	647	......
36	......	104	165 75	172	69 00	240	339 00	308	84 00	376	71 25	444	274 50	512	101 25	580	13 50	648	44 25
37	202 50	105	102 75	173	280 50	241	333 00	309	460 50	377	165 00	445	128 25	513	142 50	581	21 00	649	28 50
38	114 75	106	111 00	174	681 75	242	306 00	310	221 25	378	606 00	446	......	514	120 00	582	93 75	650	34 50
39	158 25	107	234 75	175	429 00	243	103 50	311	189 00	379	325 50	447	133 50	515	298 50	583	63 75	651	84 00
40	327 75	108	331 50	176	213 00	244	177 00	312	196 50	380	50 25	448	642 00	516	309 00	584	105 00	652	78 00
41	51 75	109	219 75	177	174 75	245	......	313	117 00	381	249 75	449	285 00	517	66 75	585	112 50	653	102 00
42	44 25	110	135 00	178	239 25	246	......	314	179 25	382	125 25	450	264 00	518	45 75	586	96 00	654	49 50
43	216 00	111	......	179	146 25	247	......	315	160 50	383	141 75	451	140 25	519	145 50	587	144 00	655	52 50
44	279 00	112	63 00	180	11 25	248	282 75	316	244 50	384	158 25	452	121 50	520	49 50	588	57 00	656	......
45	562 50	113	168 75	181	52 50	249	......	317	79 50	385	86 25	453	49 50	521	128 25	589	60 75	657	62 25
46	69 75	114	68 25	182	369 00	250	177 75	318	636 00	386	49 50	454	181 50	522	......	590	420 75	658	86 25
47	213 75	115	81 00	183	252 75	251	633 00	319	143 25	387	72 75	455	195 75	523	101 25	591	......	659	......
48	338 25	116	118 50	184	193 50	252	351 00	320	89 25	388	189 00	456	122 25	524	32 25	592	183 00	660	72 75
49	......	117	......	185	83 25	253	231 00	321	87 00	389	126 00	457	159 75	525	90 75	593	......	661	39 00
50	71 25	118	59 25	186	6 75	254	112 50	322	70 50	390	162 00	458	54 00	526	35 25	594	128 25	662	48 75
51	157 50	119	107 25	187	113 25	255	130 00	323	64 50	391	187 50	459	63 75	527	138 00	595	52 50	663	85 50
52	295 50	120	191 25	188	407 25	256	84 00	324	108 75	392	225 75	460	108 75	528	143 25	596	126 00	664	60 00
53	110 25	121	285 75	189	244 50	257	175 50	325	78 75	393	301 75	461	117 75	529	168 00	597	161 25	665	107 25
54	321 75	122	63 75	190	22 50	258	39 00	326	489 00	394	20 25	462	171 75	530	97 50	598	97 50	666	222 75
55	60 75	123	239 25	191	237 00	259	......	327	296 25	395	......	463	......	531	108 75	599	......	667	39 75
56	173 25	124	180 00	192	354 75	260	......	328	219 00	396	191 25	464	123 00	532	81 00	600	125 25	668	87 75
57	552 00	125	......	193	68 25	261	63 75	329	58 50	397	77 25	465	227 25	533	102 75	601	164 25	669	89 25
58	208 50	126	270 00	194	393 75	262	249 75	330	263 25	398	85 50	466	......	534	......	602	165 00	670	......
59	420 75	127	224 25	195	117 00	263	151 50	331	112 50	399	119 25	467	94 50	535	160 50	603	158 25	671	63 75
60	333 00	128	98 25	196	66 75	264	72 75	332	112 50	400	215 25	468	30 00	536	100 50	604	34 50	672	73 50
61	152 25	129	283 50	197	84 00	265	413 25	333	272 25	401	258 00	469	112 50	537	......	605	343 50	673	540 75
62	125 25	130	398 25	198	372 75	266	234 00	334	237 75	402	......	470	194 25	538	158 25	606	39 00	674	......
63	......	131	54 75	199	156 75	267	130 50	335	52 50	403	54 75	471	39 75	539	148 50	607	71 25	675	......
64	243 00	132	129 75	200	84 00	268	55 50	336	105 75	404	82 50	472	344 25	540	396 75	608	......	676	27 75
65	189 00	133	265 50	201	293 25	269	151 75	337	292 50	405	248 25	473	64 50	541	116 25	609	54 75	677	......
66	138 75	134	136 50	202	243 00	270	376 50	338	142 50	406	......	474	145 50	542	180 75	610	47 25	678	54 00
67	165 75	135	171 00	203	234 75	271	107 25	339	70 50	407	215 25	475	111 00	543	290 25	611	61 50	679	51 00
68	118 50	136	......	204	213 00	272	66 75	340	133 50	408	182 25	476	144 00	544	132 00	612	71 25	680	56 25

Received during month of August $110,579.50

Disbursed during month of August, account Beneficiary Claims......
3.... $3,000 $9,000
31.... 1,500 46,500
6.... 1,000 6,000
1.... 750 750
3.... 500 1,500
$63,750.00

Respectfully submitted,

W. S. CARTER,
G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from July 31, 1905, to August 31, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid
1012	Birt Crosier	1	Disability	May 31, 1905	Paralysis	$1,500	Aug. 4, 1905
564	Mark P. Wilson	96	Death	“ 20, 1904	Suicide	1,500	“ 4, “
1015	David G. Huddleston	206	“	Feb. 5, 1905	Concussion of brain	1,500	“ 4, “
1016	Fred C. Tillson	4	Disability	July 15, “	Paralysis	500	“ 4, “
1061	Loyd H. Canfield	566	Death	Apr. 18, “	Falling under train	500	“ 4, “
1063	Albert E. Morden	173	“	“ 23, “	Derailing of engine	500	“ 4, “
1049	*Stanley L. Fry	400	“	....	Railroad accident	750	“ 4, “
1076	Clarence E. Webster	57	“	May 7, “	Crushed between engine and round-house	1,500	“ 8, “
1081	James Pirie	442	“	“ 19, “	Bright's disease	1,500	“ 18, “
1083	John R. Peteet	449	“	June 6, “	Gunshot wound	3,000	“ 18, “
1084	Will C. Alvord	431	“	“ 6, “	Derailing of engine	1,500	“ 18, “
1085	Henry Munns	5	“	“ 15, “	Typhoid fever	1,500	“ 18, “
1086	Charles D. Clark	49	“	May 12, “	Boiler explosion	1,000	“ 18, “
1087	Denis Langan	228	Disability	July 27, “	Consumption of lungs	1,500	“ 18, “
1088	John D. Johnson	409	Death	June 13, “	Derailing of engine	1.500	“ 18, “
1089	John J. St. Leger	214	“	“ 17, “	Collision	1,500	“ 18, “
1090	Bernard L. Ballard	132	“	“ 19, “	Crushed by cars	1,500	“ 18, “
1092	Lynn B. Phipps	409	Disability	“ 9, “	Amputation right foot	1,000	“ 18, “
1093	Cleveland Carter	590	Death	“ 9, “	Collision	1,500	“ 18, “
1094	Bernard Carroll	519	“	“ 17, “	Derailing of engine	1.500	“ 18, “
1096	Clay Hittler	97	Disability	“ 16, “	Amputation left foot	1,500	“ 18, “
1097	George W. Burbridge	54	“	“ 22, “	Amputation left hand	3,000	“ 18, “
1098	John W. Parson	175	Death	“ 21, “	Apoplexy	1,500	“ 18, “
1099	William Crossman	271	“	“ 24, “	Suicide	1,500	“ 18, “
1100	Anthony Daily	120	“	“ 21, “	Cerebral hemorrhage	1,500	“ 18, “
1101	Corley Gross	146	“	“ 3, “	Derailing of engine	1,500	“ 18, “
1103	George Grant	559	“	“ 27, “	Derailing of engine	1,000	“ 18, “
1104	Theo. F. Armburst	601	“	“ 25, “	Typhoid fever	1,500	“ 18, “
1106	James M. Rippetoe	164	Disability	“ 15, “	Amputation left foot	3,000	“ 18, “
1108	Edward Miller	276	Death	July 6, “	Falling under mov. cars	1,500	“ 18, “
1109	John J. Reilly	226	“	June 20, “	Acute mania	1,500	“ 18, “
1110	Clarence R. Welcher	240	“	“ 29, “	Typhoid fever	1,500	“ 18, “
1112	George F. Koch	103	“	“ 14, “	Head crushed by elev'tor	1,500	“ 18, “
1114	Harry Lindenmuth	251	Disability	“ 15, “	Amputation left foot	1,500	“ 18, “
1115	Frank Seibel	570	Death	July 3, “	Run over by engine	1,000	“ 18, “
1116	Frank McAdams	244	“	June 27, “	Collision	1,500	“ 18, “
1117	Harry M. Disher	75	“	“ 16, “	Typhoid fever	1,500	“ 18, “
1118	Willis W. Fisher	23	“	“ 18, “	Derailing of engine	1,500	“ 18, “
1119	John Hensarling	590	“	“ 20, “	Derailing of engine	1,000	“ 18, “
1121	John W. Rodgers	336	“	July 10, “	Crushed between cars	1,500	“ 18, “
1122	William Fogarty	378	“	June 6, “	Falling under train	1,500	“ 18, “
1123	Frederick C. Gregg	608	“	“ 30, “	Collision	1,000	“ 18, “
1091	George W. Standley	551	Disability	July 8, “	Consumption of lungs	1,500	“ 18, “
1124	Albert J. Lloyd	378	Death	June 22, “	Derailing of engine	1,500	“ 21, “

***Compromised litigated claim, ex-member Lodge 400.**
44 death and disability claims, aggregating $63,750.

Pending Claims August 31, 1905.

74 death claims aggregating	**$101,250**
24 disability claims aggregating	**38,500**
Total of 98 claims aggregating	**$139,750**

* * * * *

Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending September 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1186	William A. Gaulding	238	Disability	Aug. 16, 1905	Consumption of lungs	$2,000
1187	George H. Booth	588	Death	“ 16, “	Typhoid fever	1,500
1188	William S. Watson	660	“	“ 17, “	Asthma	1,000
1189	John Quigley	11	“	“ 18, “	Inflammation of bowels	750
1190	F. O. Stinson	372	Disability	“ 18, “	Locomotor ataxia	3,000
1191	Michael J. Kingston	304	Death	“ 18, “	Derailing of engine	1,500
1192	Fred Williams	304	“	“ 18, “	Collision	1,500
1193	William W. Owens	294	Disability	“ 21, “	Sundry injuries	1,500
1194	Dennis Leahey	533	Death	“ 21, “	Drowning	1,500
1195	James W. Swain	622	“	“ 23, “	Inflammation of bladder	1,500
1196	Robert F. Featherly	463	“	“ 23, “	Run over by cars	1,500
1197	Charles C. Standart	389	“	“ 23, “	Nephritis	1,500
1198	John A. Kennedy	597	“	“ 23, “	Derailing of engine	1,000
1199	George H. Devers	489	“	“ 24, “	Collision	1,000
1200	Charles D. Schreck	275	“	“ 25, “	Collision	1,500
1201	H. L. Briggs	115	“	“ 25, “	Heart disease	1,500
1202	Fred Pence	380	Disability	“ 25, “	Amputation of left hand	1,500
1203	Jacob M. Miller	673	Death	“ 26, “	Struck by moving train	1,500
1204	John A. Baker	371	“	“ 28, “	Paralysis of heart	1.500
1205	Ralph R. Moore	489	Disability	“ 28, “	Amputation of right foot	1,500
1206	Edgar C. Rowles	96	Death	“ 28, “	Struck by passing train	1,500
1207	William A. Sullivan	642	“	“ 28, “	Derailing of engine	1,500
1208	George Mudd	21	“	“ 28, “	Suicide	1,500
1209	Homer H. Swartz	527	“	“ 29, “	Collision	1,500
1210	George W. Healey	363	Disability	“ 31, “	Amputation of left arm	3,000
1211	John G. Seeman	434	Death	“ 31, “	Typhoid fever	1,500
1212	Alonzo Merrick	251	“	“ 31, “	Cancer of bowels	1,500
1213	Jesse R. Jones	178	“	Sept. 1, “	Pernicious fever	1,500
1214	William Watkins	448	“	“ 1, “	Derailing of engine	1,500
1215	John Eggiman	141	“	“ 2, “	Derailing of engine	1,500
1216	William A. Fitzgerald	10	“	“ 2, “	Gall stones	1,500
1217	Samuel Way	98	“	“ 2, “	Appendicitis	2,000
1218	Cloyd T. Miller	451	“	“ 2, “	Typhoid fever	500
1219	Cicero H. Hoover	626	“	“ 5, “	Derailing of engine	500
1220	L. W. Oakley	463	“	“ 5, “	Falling from engine	1,500
1221	Noon Wallace	154	Disability	“ 5, “	Consumption of lungs	500
1222	Thomas Monroe	121	Death	“ 5, “	Appendicitis	1,500
1223	William H. Gibson	313	“	“ 5, “	Collision	1,500
1224	Robert J. Lindenbolt	681	Disability	“ 7, “	Amputation of left hand	1,500
1225	Edwin D. Root	330	“	“ 7, “	Bright's disease	1,500
1226	Walter Eversman	582	Death	“ 8, “	Collision	1,500
1227	John Z. Holland	590	“	“ 9, “	Drowning	1,500
1228	Norris L. Board	502	“	“ 11, “	Crushed betw. engine and tender	1,500
1229	Ema Z. Ford	348	“	“ 11, “	Heart failure	1,500
1230	Frank M. Fisher	372	“	“ 12, “	Falling from moving train	3,000
1231	Louis L. Ayres	573	“	“ 12, “	Derailing of engine	1,500
1232	Henry K. Baker	13	“	“ 13, “	Collision	1,500
1233	James Baird	139	Disability	“ 13, “	Paralysis	1,500
1234	Frank B. Price	104	Death	“ 14, “	Collision	1,500
1235	Charles E. Parker	72	“	“ 14, “	Run over by engine	1,500
1236	Henry J. Meldrum	480	“	“ 15, “	Strangulated hernia	1,500

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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Statement of Donation Claim Paid

From July 31, 1905, to August 31, 1905, Allowed by the Ninth Biennial Convention.

Claim No.	NAME.	Lodge No.	Death or Disability	Date of Filing.	Cause.	Am't of Ins.	When Paid.
540	William J. Carnahan	96	Disability	Sept. 19, 1904	This claim was irregular and did not come within the law, but was allowed and ordered paid by the Ninth Biennial Convention.	$1,000	Aug. 18, 1905

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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Beneficiary Assessment Notice No. 136.

To the Treasurers of Subordinate Lodges: Peoria, Ill., October 1, 1905.

Dear Sirs and Brothers:—You are hereby notified that assessments for death and disability claims are hereby levied as follows: For each beneficiary member whose name appears on the rolls of membership on October 1, 1905 (also for all beneficiary members having taken a withdrawal or transfer card after October 1, and for all members who died or were totally disabled since October 1), carrying a Beneficiary Certificate of Three Thousand ($3,000) Dollars, you are required to forward the sum of Four Dollars and Fifty ($4.50) Cents. For those carrying a Certificate of Two Thousand ($2,000) Dollars, you are required to forward the sum of Three Dollars ($3.00). For those carrying a Certificate of Fifteen Hundred ($1,500) Dollars, you are required to forward the sum of Two Dollars and Twenty-Five ($2.25) Cents. For those carrying a Certificate of One Thousand ($1,000) Dollars, you are required to forward the sum of One Dollar and Fifty ($1.50) Cents, and for each member carrying a Certificate of Five Hundred ($500) Dollars, you are required to forward the sum of Seventy-Five ($0.75) Cents. Said remittances to reach the Grand Lodge not later than October 20, 1905, as provided in Section 62 of the Constitution.

Yours fraternally,
W. S. CARTER,
G. S. and T.

Special Notice.—All remittances must be made by Bank Draft, Money Order, or Express Order. Beneficiary members initiated after October 1st are not liable for this assessment.

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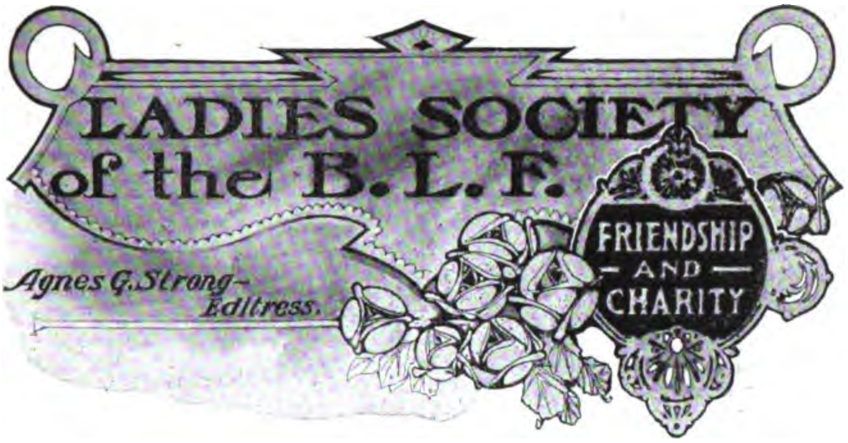

LADIES SOCIETY of the B. L. F.

Agnes G. Strong—
Editress.

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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From the Grand President.

Insurance Department.

Our attention has recently been directed to the withdrawal of a certain number of members for the purpose of affiliating themselves with another insurance organization which offered, to quote from the statements made, "more in return for the money invested than is offered by the Ladies Society."

The history of insurance is quite interesting. For some time past the daily press has been printing stories which have led many thoughtful persons to do a "heap" of thinking. We all know, either by the experiences of our friends or possibly by our own, the fate which has overtaken the many organizations of fraternal insurance which started out under the blare of trumpets and with the announcement that much would be offered for little. It was on par with the merchant who was always advertising to sell his merchandise "below cost," and when asked how he managed to pay expenses, replied, "that all of his profit was made from the wrapping paper and twine with which he wrapped his bundles." It is needless at this time to refer to the many investment organizations which offered to pay its policy holders, say, within ten years, almost double the amount paid in by them. It is true that in some cases the first to cash in received the amount promised; but the tail-enders received nothing, and all that they had for their years of investment were a highly illuminated policy and the receipts for money paid in.

The Ladies Society, through its Insurance Department, does not offer to its members alluring inducements in the way of large financial returns. At the rate of ten cents per hundred dollars per month, payable quarterly, it guarantees to promptly pay to the beneficiary and beneficiaries, upon proper proof of death, the amount specified by law as being due on the certificate held by the member at the time of death. Its policy has been conservative, and while it is ever mindful of the interest of its members, endeavoring to give the best possible return for the money invested, at the same time it desires to maintain that feeling of security to its members which is so essential to its success, that when the inevitable time approaches they will know that, while the amount to be received by the loved one will not be very great, there will be no delay in its payment.

It might be asked, why is it that the careful investor prefers the bonds of the Government, paying 2½ per cent. to 3 per cent., to those which offer from 10 per cent. to 15 per cent.? No doubt, were they imbued with the spirit of gambling, they would take a chance on the higher rate, but, realizing, as they do, that you can not, as a general rule, get something for nothing, and they therefore feel that it is much better and safer to be content with a small but sure return. What bona fide insurance organization, be it fraternal or otherwise, offers a better investment than does the Ladies Society? It does not distinguish between the applicant of twenty years and the one of forty-five. Even in this it goes perhaps further than it should; for experience has shown that other fraternal insurance organizations have been required to adopt a step rate plan in the payment of insurance assessments by their members in order that the amount guaranteed would be promptly paid upon the receipt of proper proof of death.

Again, does not the Society offer many inducements to its members other than those of a death benefit? Who can measure by dollars and cents the comforts and pleasures which are a part of membership in the Society? The Society is closely identified with the organization which stands for the protection of our husbands, fathers and brothers. If a wrong is committed against them, the Society, through its members, stands ready to do its utmost to help right that wrong. If sickness or death invades the home of a sister or brother, the sisters, like ministering angels, perform that duty which we then owe to each other. Instead of us being alone, with no one to turn to for help and sympathy, we are surrounded by devoted friends, who try to lighten the burden for us. It is true that there are other organizations equally as good in this respect as the Ladies Society, but is there any organization which comes nearer to the interest of the home than it? Is there any organization which is deserving or should receive greater support from the families of the locomotive firemen, members of the Brotherhood of Locomotive Firemen, than the Society which bears its name?

To those of our members who may contemplate withdrawing from the Society for the purpose of "getting cheaper insurance," it is respectfully suggested that before they make such change they look the situation squarely in the face and ascertain if they will, in the long run, really be financially benefited thereby. In consideration of the small sum of sixty cents per quarter, the Insurance Department guarantees to promptly pay to the person or persons named in the insurance certificate the amount specified therein, or such an amount which may then be due as provided by law. Taken as a whole, we know of no insurance organization of any standing which offers to its members, with a guarantee of prompt payment, more in return for the small amount invested than does the Ladies Society of the Brotherhood of Locomotive Firemen. The social side of the organization, as represented by its lodges, depends entirely upon the members of that particular lodge. If they are progressive and are imbued with the proper neighborly and fraternal spirit, they will do their share in adding to the sum total of the happiness of all. The Society does not claim to offer a "cheap" insurance, for very often cheapness and poor quality are synonymous: but it does claim to offer a reliable insurance within the reach of all who are eligible to membership.

Quarterly Password.

The new quarterly password for the quarter ending December 31, 1905, has been mailed to the Presidents of all lodges who are in good standing on the grand registers. Any President failing to receive the password should immediately correspond with the Grand Secretary and Treasurer and bring such fact to her attention.

Payment of Dues—Suspensions.

The attention of the officers and members is again directed to the matter of reporting suspensions. There seems to be an impression that suspensions are reported direct to the Grand Secretary and Treasurer. It is hoped that the following copy of a letter addressed to an officer of a subordinate lodge, in response to one received by her asking for information, will be of some service to any lodge which is in doubt as to the application of the law governing suspension for nonpayment of quarterly and grand dues:

"It would appear that you have failed to carefully read the provisions of Section 86 of the Constitution, defining the duties of the Collector, and making special reference to reports, by the said officer, of suspensions for nonpayment of dues. The law requires, that a member failing or declining to pay her dues, be they grand or quarterly, on or before the first day of the quarter in which they are due and payable, shall be reported suspended by the Collector to the Secretary, and the latter officer shall report the said suspensions to the lodge at the next meeting thereafter. The law, which we must all obey and which is my duty to enforce, gives to such suspended members sixty days in which to reinstate themselves by the payment of the dues for which they are delinquent. (As to the wisdom of such a law is a matter for discussion at the meetings of the Grand Lodge.) During such suspension, all rights of membership are withheld. The real status of a suspended member is similar to that of one expelled, with this exception: She may, provided she is in as good physical condition as at the time of suspension (and I might add that the law presupposes that she is not suffering with any ailment which would debar her from membership in the Insurance Department), regain her membership by the payment of the dues for which she is delinquent, while in the case of an expelled member, she must come in in all things as a new member. The record of these suspensions is kept by the Collector and Secretary and no report thereof is made to the Grand Secretary and Treasurer. At the expiration of the sixty days from the date of the suspension, the Collector is required to report to the Secretary the names of all members who have failed to be reinstated, and immediately, without waiting for the meeting of the lodge, the Secretary reports to the Grand Secretary and Treasurer the names of all members expelled for nonpayment of dues, giving date when such expulsion is effective. Under the present laws the insurance assessment is not forwarded until the last month in the quarter, so that ample time is allowed for the report of expulsions to reach the Grand Secretary and Treasurer prior to the receipt by her of the insurance assessment.

"In the case of grand dues, which are also payable on or before the first day of July and January, respectively, and returns thereon are due at the office of the Grand Secretary and Treasurer on or before the tenth day of the said months, where members have failed to pay their grand dues and no money is forwarded, a statement can accompany the said returns, to the effect, that the members for whom no credit is given on the attached statements have failed to pay their dues; if payment is made within the sixty-day limit, the amount due will be forwarded with the returns for the insurance assessment due the last month of the quarter, otherwise a report of expulsions shall be made by the Secretary. Of course if the lodge, under the provisions of Section 123, maintains the standing of the member, she of course will be in good standing. The lodge is not, however, required by law to make returns for members who fail to make payment. The lodge, as is contemplated by law, is expected to guard the interest of the Society and to see that its laws are faithfully carried out. It is just as much to the interest of a lodge in Maine to have the laws enforced as it is for a lodge in California. Of course should a lodge connive with a member to defraud no doubt it would be successful; but I have faith to believe that there is no lodge of the Society which would intentionally be a party to a fraud. It was with that view that the law with regard to suspensions was placed in the hands of the local officers for enforcement. Furthermore, a member might be reported suspended on the second day of the quarter. This report would be made to the Grand Secretary and Treasurer. On the following day this member would pay her delinquency and be reinstated. An oversight on the part of any officer to report such reinstatement would result in confusion, for when returns were received for that member they could not be credited until a report of her reinstatement was made. To save confusion and extra work, it was deemed advisable to keep the record of suspensions in the lodge records and not those of the Grand Lodge. Of course should a member die during such suspension her status with the Society would be the same as an expelled member, as her beneficiaries could not collect on the insurance certificate, which was also suspended, nor could they, by the payment of the amount in arrears, reinstate the said certificate.

"If there are any laws which, in the opinion of yourself or the members of your lodge, should be changed, let the matter be properly brought to the attention of the next biennial convention. In the meantime it is suggested that we will endeavor to comply with the expressed purpose of the present laws and be not too technical. Simplicity is the aim sought for in our laws and in our methods of transacting business. As a general rule, our members have not too much time to devote to lodge affairs. If your lodge, as well as all other lodges, will follow the suggestions contained herein, it is believed that the work of the officers will be simplified, while the interest of the Society will be protected. Yours in Friendship and Charity,

"(Signed) G. M. SARGENT,
"Grand President."

* * *

Greetings from "Mother Leach."

Sisters, again I greet you. I have received quite a number of beautiful letters from the different societies, which I greatly appreciate, and I wish I could answer each one. I am always so glad to hear from the different lodges, and am specially interested in your prosperity and good work, and note that you are working together harmoniously, and under our beautiful motto, "Friendship and Charity."

Our Worthy Grand President, Sister Sargent, gave up a lovely trip with her husband because of the welfare of the Ladies Society. Now show her, sisters, that you appreciate this sacrifice, by kind words, and good works. And every lodge in the Ladies Society should write for the Magazine. I know that all enjoy the ladies department and, sisters, do not forget that the Editress can not tell the news of your societies unless you write and tell her of it. Now let each one help our Editress by sending the news and keep up the Magazine we all so much enjoy.

I have just returned from Kansas City. There I met with Lodges 32 and 90. Both are doing good work and I enjoyed a very pleasant visit and was royally entertained.

Now I am still trying to make my B. of L. F. album of the souvenir postal cards, and I do appreciate every card. I have about twelve from our brothers and I truly thank the "boys," who so kindly sent them to me. I want to especially thank the sisters of Little Rock, Tucson, Peoria, Ogden, Marquette, and Detroit, who sent me one for each member. To the sisters who have sent me a card, I thank you, and if I live to attend the next convention at Milwaukee, I shall bring my album with me so that you can all see it and enjoy it with me. I do hope that I shall hear from more of "my boys" and from all of our societies.

With best wishes to all, I will close.

Ever your friend,
Mother Leach.

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A Visiting Party.

A decided success was the visiting party given by Galveston Lodge, No. 40, L. S. to the B. of L. F., in their lodge-room in the Garhart Block, in honor of the firemen's wives who are not members of the Society.

Invitations to the number of seventy-five had been issued, to which a goodly number responded. They were ushered into the cloakroom by Mrs. George Kiehl and Mrs. George Stabbner. In the receiving line stood Mesdames Ginder, Sickmiller, McGraw, Heitzman, Hogan, Wayne, Washner and Stoffer.

The time was delightfully spent in a social manner and listening to a few appropriate remarks on the good of the Order by the President of the Society, Mrs. John Ginder. A dainty luncheon, which consisted of cream, cake, coffee and opera sticks as afterthoughts, was most admirably served by the refreshment committee. Each guest was presented with a carnation as a souvenir of the occasion. All departed to their homes saying it had been a few hours most enjoyably spent. The out-of-town guests were Mrs. Iva Russel and son, of Plymouth, and Mrs. Geyer, of Mansfield.—Galion Daily News.

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Her Faith.

Little Elsie was going on a railway journey. When her mother put her to bed in the sleeping car, at night, the child was requested to say her prayers, as usual.

"Oh, what's the use bothering God about it tonight?" she demanded. "The engineer'll take care of us all right, won't he?"—Record Herald.

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Our Magazine.

My desire—and I trust it is your desire, too—is to make this department a benefit to all of us. Won't you tell me how you think we ought to do it? Have you no suggestions you would like to make? Are there not some other topics you think should come within the field of the L. S.? If so, will you not write to me and suggest them? I should like to hear from every member who has anything to say that she thinks will benefit the department and be of use to other members.

Since the January, 1905, issue of the Magazine we have twelve pages allotted to us through the kindness of the Brotherhood and its Editor and Manager, for the use of the Ladies Society.

The advantages which accrue to the Society on account of this privilege must be apparent to all. The Magazine enters the homes of many who are not today affiliated with our Order. Through this medium we are enabled to reach many who otherwise could not be reached through ordinary channels. It has been a source of gratification to me to note the support, in the way of contributions, which has been given to me, to help make these pages attractive and of interest to the members, as well as to direct the attention of others to the work in which we are engaged. When it is considered that this immense field for advertising is given to the Society absolutely free, and that we are thus enabled to place before the membership matters of importance without the necessity of going to the expense of having circulars printed and mailed, we should show our appreciation to the Brotherhood by making this space attractive and of credit to both the Brotherhood and to the Society. Our desire should be to interest the brothers and their families, especially those who are not members of our Order, in the aims and purposes of the Society. Were we depending wholly upon our own efforts, how could we hope, without the outlay of considerable money, to accomplish this? By means of the Magazine the Society is constantly kept before the readers, who will, if the members do their duty, be kept advised of the good work which is being performed each day.

Therefore, I can not urge too strongly upon the members of the Ladies Society the necessity for our members taking an active interest in our department of the Magazine and bringing it up to the highest possible standard. When a lodge has worked out an idea which has been found to be of benefit, a letter for publication should be written, giving details, so that all lodges can, if they wish, avail themselves of the same, and profit by the experience of their sisters in other sections.

* * *

Give Encouragement.

Encouragement is a good thing to give, as well as to receive. If we as individuals were as prone to encourage and help one another as we are to find fault, we would be the happier for it, and the world would be the better for our having lived in it. A word of cheer is a small thing to give, but it often means much to the one to whom it is given. It is not the great deeds for others, but the little kindnesses that make up the round of needful service. It has been said that "The truest happiness is that which comes to us in a great many little pieces, from having done many little things wisely and well." However this may be, we all owe a mutual help to each other, and while it may not be ours to give great gifts, or do great deeds, each day will bring opportunities to do little acts of kindness. It is our duty to do the things we can, and not presume to fret because it is little. "True worth is in being, not seeming; in doing, each day that goes by, some little good, not in dreaming of great things to do by and by." It is true that kind actions are not always received with gratitude; but this should not interfere with us from doing our duty. Thoughtfulness, kindness and consideration for others will always repay themselves a hundred-fold. After all, the all-important question is not what we have or have not done, but have we done our duty?

* * *

New Lodges.

A new Lodge at Danville, Ill., No. 190, "Pride of 516," with ten charter members. Organized July 20th.

"None Such" is the name of a new lodge which was organized in West Springfield, August 2d, and to be numbered 200.

Charter applications have been received for new lodges at the following places: El Paso, Tex.; New Franklin, Mo.; Washington, D. C.; Mt. Carmel, Ill.; Columbus, Ohio.

* * *

New Lodge Added to Spokane's List.

Spokane Lodge, No. 195, is the youngest Society in the city, having been organized April 12, 1905. It started with nine charter members. Since its organization, however, the lodge has initiated two new members, and now has four additional applications for membership on file. In Spokane it is estimated there are 400 ladies eligible to membership in the Order, and a vigorous campaign for new applications will be started just as soon as the new Society has gotten fairly on its feet. Those eligible to membership include wives, mothers, sisters and daughters of locomotive firemen.

The Ladies Society of the B. of L. F. is a fraternal and insurance society, the amount of insurance possible to be taken out by the members ranging from $200 to $400. The lodge originated in Tucson, Ariz., in April, 1884. During the first six years of its existence it was an independent organization, but at the second biennial convention, held in San Francisco in September, 1890, it became recognized as an auxiliary to the Brotherhood of Locomotive Firemen. The working plan of the lodge was entirely revised at its seventh biennial convention, held in Buffalo in September of last year. The present headquarters of the Order is at Peoria, Ill. There are now three lodges of the Order in this State, those of Hillyard, Tacoma and Spokane.—Taken from a Spokane newspaper.

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The World As It Is.

It's a gay old world when you're gay,
And a glad old world when you're glad,
But whether you play
Or go toiling away,
It's a sad old world when you're sad.

It's a grand old world if you're great,
And a mean old world if you're small,
It's a world full of hate
For the foolish, who prate
Of the uselessness of it all.

It's a beautiful world to see,
Or it's dismal in every zone;
The thing it must be
In its gloom or its glee
Depends on yourself alone.
—Yoeman's Shield.

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Notes.

"Somehow I never feel like good things belonged to me till I pass 'em on to somebody else."—Mrs. Wiggs of the Cabbage Patch.

Get acquainted with your order. You will fall in love with it; then you will talk for it, plan for it, and work for it.

An insurance journal says: Drones, doubters and disturbers are pessimistic, pusillanimous persons, and sometime a very bad dose of these three constitutes a kicker.

Final success attends the efforts of those determined to do right, regardless of temporary results.

Every member of the order is expected to do something towards improving the condition of their society. Certainly every member can attend lodge meetings now and then and by their presence encourage the officers and working members.

Open the lodge meetings on time. Promptness will inspire confidence and confidence will touch the day spring of action and push the work to unbounded success.

The officers of every society should become familiar with the ritualistic work so they can dispatch business in a manner that will command the praise and admiration of all; then there will be no lagging in interest and attendance.

The echo always has the last word.

Delegates to the Buffalo convention can not forget the young woman of remarkably winning personality, who was the delegate from No. 165, Commerce, Texas, Mrs. Anna Hightower. She has been in very poor health and has been unable for the past three months to leave her bed. She is in Las Vegas, New Mexico. It is the sincere hope of the sisters that our sister may soon be restored to health after her long and tedious illness.

It is always to be remembered that the "Letters from Friends" must reach this office by the fifth of the month. First come, first printed.

Our aim should be to catch some portion of a noble inspiration, to follow high ideals, to worship truth wherever found, and so become worthy to carry the banner of enlightenment and intellectual and spiritual liberty in the very front of that procession—the procession of humanity.—Wright.

I am glad to learn that during the summer months many of the societies have been enjoying L. S. picnics. These social gatherings are welcome and put new life and spirit into the society.

An invitation has been received from Woodbine L. S. No. 73, of Omaha, Neb., to attend a social and sale, to be given on September 13th. We regret our inability to attend.

"We all owe our duty to humanity at large, and if we can gladden the heart, lighten the burden or lessen the tear that creeps down the cheeks of those who are down-hearted we but exemplify the feeling that sympathy is the flower that crowns our everyday life."—Ex.

Investigating committees should make it their business to get complete information as to the character of applicants for admission to our lodges.

Sisters, keep the coals of friendship and sisterly love burning upon the altar of your hearts. Your sister needs the touch of a friendly hand and words of kindness and love.

Envy and malice have no place in the L. S. lodge-room.

Two new lodges are soon to be organized; they are "Pride of 188," Chicago, Ill. Its number will be 201, and "Mt. Vernon," at Washington, D. C., number 202. Welcome.

Miss Mabel Sargent, the charming daughter of our dearly beloved Grand President, is to be a charter member of Mt. Vernon L. S. No. 202.

In every phase of life, we find there is no strength like that of union, of concerted action. A long pull, and a strong pull and a pull altogether is the secret of wonderful success.

I take it that one cause of our society's growth is because of the unison of spirit which has ever characterized our workers. Unconsciously we have taken advantage of the truth that only in union is there strength, and this is the secret of any society's advancement. There is the fable of the banyan tree which for years had cast a luxuriant shadow to passers by; the roots became angry at the leaves. "We toil underground, and you flutter idly in the sun," said the roots. "We drink in the rain and light and send down to you ingrates," responded the leaves. Then, both angry, they resolved to act no longer in unison. The roots would send no sap to the branches. The leaves in consequence withered and died, and the shade being removed, the ground beneath it dried and baked in the burning sun, and the roots, deprived of moisture, soon shriveled and died.

What is the future of our order? for to me it is not enough that we are represented in many States. The size to which we have grown heightens our responsibilities. It is not enough that we have delightful social gatherings, and often literary feasts. At this age something is expected of a society of our size. As this is humanity's century, we must enter as a factor of progress and good.

What are the aims which are at the same time duties? They are the perfecting of ourselves, the happiness of others. —Kant.

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A Useful Art.

One of the most difficult things to do. sometimes, is to keep one's temper. A calm serenity of temper and self-control, which keeps a person unruffled amid the petty annoyances and ills of everyday life, indicates the possession of perfect mental health; says Woman's Life. Nowadays people are very fond of saying so-and-so was "just mad," meaning very angry, but it would be well if temper were more often seriously regarded as madness. It may be preventable madness, but madness it is while it lasts, and there is seldom any one who is made more unhappy by it than the person who gives way to it. In our treatment of the ill-tempered the cultivation of the art of not hearing will be very helpful. It is a useful art all through life.

True worth is in being, not seeming,
In doing each day that goes by
Some little good, not in dreaming
Of great things to do by and by.
For whatever men say in their blindness
And, spite of the fancies of youth,
There's nothing so kingly as kindness
And nothing so royal as truth.
—Alice Cary.

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The "Big Ten."

1. No. 142, Empire, Buffalo, N. Y., 127.
2. No. 70, Holly, Buffalo, N. Y., 105.
3. No. 3, Hazel, Peoria, Ill., 87.
4. No. 60, Pride of 174, Harrisburg, Pa., 85.
5. No. 146, Virginia, Chicago, Ill., 77.
6. No. 58, Sisters of 90, Rochester, N. Y., 75.
7. No. 125, Charity, Jackson, Mich., 70.
8. No. 10, Helpmate, Elkhart, Ind., 68.
9. No. 113, Ft. Orange, Albany, N. Y., 64.
10. No. 51, Grayson, Tex., 60.

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Opportunity.

Many are the forceful phrases used to indicate the importance of recognizing and taking advantage of an opportunity when it is presented. "Opportunity is bald behind," the ancients said; "you can not seize her after she has passed." The yachtsman believes in setting sail when the wind is fair. The blacksmith strikes while the iron is hot; the farmer makes hay while the sun shines. Not less wise was Brutus when to Cassius he addressed these words:

There is a tide in the affairs of men,
Which, taken at the flood leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
And we must take the current when it serves,
Or lose our ventures.—Shakespeare.

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The Leading Ten.

While reading the August issue of the Magazine, we were very sorry that No. 80 was not one of the "Big Ten." We ought to be one of the leading ten in the L. S. to B. of L. F. Well, to use a common term, "What are we going to do about it," sisters? You know what Pope (the fine old poet) says about attaining success:

"Glory from no conditions arise,
Act well your part,
There all the honor lies."

Now just for a change, sisters, let us each try for at least one year to act well our part in securing new members and become by the first of June, 1906. one of the "leading ten."

Under the present wave of deep sorsow that has passed over our entire community on account of the dreadful wreck on the Iron Mountain, and sad accidents to some of our most noble Brotherhood men, we find it very hard indeed to write a cheerful letter. We can only pray and trust to a higher power than our own for the safety of our loved ones and extend our heartfelt sympathy to those whose sorrow is too deep and sacred for any expression of condolence to reach.

We greatly appreciated the honor of having Brother Maier with us on the night of public installation of officers. No. 45 and Primrose No. 80 held joint installation exercises, after which Bro. Maier gave us a very interesting talk, at the close of which he recited in his own beautiful style "The Ones Who Died in Their Overclothes," which is one of our favorite poems.

I wonder if many of us appreciate the many blessings which crown our lives as highly as we should? We are told, in "What the World Is Seeking," that the main object of existence with the (majority) of the human race is happiness. Some of us think that we live to do good. What is doing good? What is doing good but being happy, in the long run? Lew Wallace says, "Look this world over for beauty. Unless you carry it with you, you will not find it."

The same may be said of kindness and contentment, happiness and love. We find them in others in proportion to the extent we possess them ourselves. Were you asked to invoice your stock of happiness, or reasons for contentment, would not your first item be "those whom I love and who love me," and so we may realize that an hour, a day or a trip over the road may take out of our lives forever the being in whose life we have the greatest interest and in whose love we enjoy our greatest blessing. Those of us who are fortunate enough to possess contentment and happiness should endeavor to scatter sunshine everywhere we go.

We want to tell you about a very enjoyable entertainment given at the beautiful and hospitable home of Sister McGonan, on West Second street, July 20th, in the form of a box supper and for the benefit of the lodge. The spacious lawn was beautifully illuminated with Japanese lanterns, and abounded with commodious seats. The house decorations and the entertainment were in Oriental style. A delightful musical program was rendered, consisting of numbers on the piano, mandolin and guitar. Mrs. McGonan was assisted in receiving by her two accomplished daughters—Mrs. J. E. Harrison (former president of Primrose Lodge), and Miss Grace McGonan. We can not give in detail the varied and interesting program, but want to especially compliment the music; it was very fine and will always remain one of the sacred treasures of memory. Did I hear you say where did the "boxes" come in? Well, they came out on the lawn, in the beautiful moonlight, where all those young folks (we were all young people that night) had wearied of dancing—not weary, either, but ready to rest awhile, and eat. Refreshments were provided bountifully, and when we separated at a late hour all felt that it had been a most enjoyable evening.

I wonder how many of the L. S. have the Wednesday afternoon socials? We do, and they are certainly a success. Last Wednesday, the 4th of August, we had the pleasure of entertaining the sisters at my home. Every one was asked to bring her thimble, as this was to be a "thimble bee," and as we talked and made merry, we also made aprons, which were sold for the lodge, thus promoting the financial as well as the social interests of the society.

Yours in Friendship and Charity,
ORA BOON,
Primrose Lodge 80.

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The Ladies Society.

Upon the arrival of the B. of L. F. Magazine I immediately turn its pages to the Ladies Society Department, to read what is being done by the different lodges for the advancement of our beloved Order.

I find as I read each article carefully that our pleasures and our struggles are about the same the world over.

Our lodge here in Oneonta has been organized a number of years, and while we are not so situated as to be able to hold a large membership, we are safe in declaring "we are strong in our good will toward each other."

Some of our sisters have removed to other places to live, but their interest remains the same and their dues are sent regularly to help us along financially, and anon comes a letter or a visit from them that tells us their hearts are still with the sisters of 83.

But there are some brothers' families, yet, whose names are not on our roll-book, and we want them, also.

We want the endless chain of "Friendship and Charity" so strong that when we see a fire-laddie on the street (be he grimy and black with coal-dirt and carrying a dinner-pail as large as a suit case, or all cleaned up in his Sunday best) we can know through the interests of his own loved ones he has an interest in our auxiliary, which is a part of the Order to which he so proudly belongs.

Sisters, in closing let me call your attention to the items in this department under "Notes." That you all read them I am sure, for they certainly are worthy of it; but read them again and again, and the ones in previous numbers as well. They are "Helps," and in your home-life as well as in lodge work they will help you over the rough places of life into the green fields beyond.

IMOGENE BATES,
Oneonta, N. Y.

Letters from Friends.

FROM L. S. 78—(*A Member, Raton, New Mexico.*) I see by the August issue of the Magazine that our feeble little letter did not find the waste basket before it did the press, so I will endeavor to write to you again. At our last regular meeting, July 26th, we installed our newly elected officers. Mrs. Mattie Durrell was called to the chair by the President and requested to perform the installation ceremonies, which she did in a most worthy manner.

We also had the pleasure of having Mrs. Goodyear, of Trinidad, Colorado, as our guest on that day. The next day a reception was tendered Sister Goodyear at the home of Mrs. W. H. Carlows. The members of 78 turned out in large numbers and a good time was enjoyed by all. Refreshments, consisting of ice cream and cake, were served.

We feel greatly encouraged over the prospects for a few more new members. From the bright smiles and pleasant faces the eligible visitors wore the evening of the reception, we believe they are thinking seriously of joining us, and we hope to have them numbered with us soon.

The columns of the Magazine "are chuck full of good things this month;" it is real encouraging to read them. It makes us feel a little sad to see that other orders are having their joint meetings and joint installation and to think that we can not get up that much interest at home.

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FROM L. S. 98—(*Effie M. Woods, Secretary, Los Angeles, Cal.*) We (Orange Blossom No. 98) were organized on the twenty-second day of June, by Sister Lenore McClure, Past-President of Flower of the Desert No. 5, with seventeen charter members, and as I have perused the Magazine closely and failed to see any notification of the fact except in the new directory, and as we are very proud of our Society and anxious for every one to know that we have organized at the "City of the Angels" in the "Garden Spot" of the world, I deemed it my duty as Secretary to write.

Though we have been organized but a little over six weeks, we have progressed wonderfully, having eleven new applications, with several more in sight, and nearly $95.00 in the treasury; this in spite of the fact that when organized we were compelled to go in debt to the Grand Lodge for our supplies. Though Orange

Grove Lodge No. 97 was willing to help us, we preferred to launch our little craft alone and have the pleasure of seeing it grow into one of the best of the fleet that now sails on the serene ocean of the Society, as we feel sure it will, if it can be done by hard, conscientious work of a capable President and an enthusiastic band of officers and members, and the willingness of one of the best lodges in the West to assist us parliamentarily, socially and morally.

Our first attempt was a social at our Vice-President's, Sister Farran, which netted us a nice little bonus for a starter.

Our next social event was more pretentious, it being a dance at the Y. M. I. hall. Brother Woods, Master of No. 97, took a number of tickets to the lodge-room and distributed them among the brothers, who, loyal to our cause, sold them faster than we could supply them. This dance put $70.00 clear money in our treasury; some more thanks to our brothers. Orange Grove Lodge No. 97 invited us to our first joint meeting on Friday, July 28th, and a most enjoyable time was experienced by every one. Music, songs, stories, and last, but not least, ice cream and cake, were the program of the evening, and we were much pleased to learn that they had decided that we would have a joint meeting once a month. May success crown the efforts of every lodge in the Society is the wish of the infant of the sisterhood.

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FROM L. S. 17—(*Mrs. M. A. Dunbar, Secretary, Palmerston, Ontario, Canada.*) It has been a long time since we have written for the Magazine, and thinking that the sisters might like to know how No. 17 is getting along, I thought I would write and let you know that we are still in existence, and are having a steady increase in membership. In the last five months we have added six new members to our roll call, and have the promise of some more in the very near future. There are quite a number that are eligible and ought to belong to our Society, but when you ask them they always put it off a little longer and say that they expect to belong some time, but want to wait until a certain time. Our Brotherhood lodge is quite large. They have new members to initiate at every meeting, but a large number of them are unmarried men.

On July 17th the Brotherhood lodge and No. 17 gave an "at home" to the members of both lodges, and it was a success; every one seemed to enjoy themselves. We had a splendid program and delicious ice cream and cake, and the evening ended up with a dance, of course. All expressed themselves as having a thoroughly good time.

Thanking the boys for their help, and wishing all the sister lodges unlimited success, and to all those interested we extend good wishes.

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FROM L. S. 7—(*Mrs. W. A. Anderson, Palestine, Texas.*) I must not forget the duty I owe Holy City Lodge. The time glides by so swiftly. We have had such a lovely season. Our meetings have been well attended the past year. Much credit is due the past officers, who have labored so hard to gain such results. May their successors be as prompt and faithful, and we have every reason to believe that they will, for an up-to-date and flourishing society is the aim of all.

We have taken in two new members recently and anticipate taking in several more in the very near future.

Come on, sisters; you will never be sorry that you joined our band.. Sisters, we are going to nail the flag of harmony at the masthead of our society; live up to our obligations; keep the Golden Rule ever in our minds. There is a power in the word "love," so let us love one another.

When you hear of good in people tell it; when you hear an evil tale quell it. Let the goodness have the light: put the evil out of sight.

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FROM L. S. 86—(*Katie Walters, Laramie, Wyoming.*) Some time ago we decided in our little lodge to write letters for the Magazine in alphabetical order.

Now, it is not my turn by any means, but I thought I would write anyway, and tell the sisters we are all very much alive and constantly on the lookout for new members.

Brother White has taken unto himself a sweet little life partner, and we already have her promise to join us in the very near future.

Now, brothers, don't be so slow; do hurry up and follow Brother White's example. He has paved the way, and we need your assistance to increase the membership of 86. If all would follow his example, what a large lodge we would soon have.

Our new officers are all in now for a good year's work.

A "bran" new fireman has arrived at the home of Brother and Sister Moody. And you ought to see the broad smile Brother Moody is wearing. He arrived the 29th day of July.

I was pleased to see the large number of new lodges that have been organized since last convention. Let the good work go on; sisters, help all you can. If we can increase our membership we can have more insurance.

I want to send greetings to all the sisters and delegates that I met in Buffalo, while at convention. I have many pleasant recollections of our meetings together and should like to some time meet the same faces again.

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FROM L. S. 76—(*Mrs. Della C. Herman, Louisville, Ky.*) It has been some time since the readers of the Magazine have read anything from Willing Helpers L. S. 76. But we are all very much alive and ever ready to work for the good of the Order. We are constantly endeavoring to encourage the Brotherhood of Locomotive Firemen, in whose interest our society was organized, and at all times to live up to our motto, "Friendship and Charity."

Two of our sisters are rejoicing over the advent of small daughters in their families, and we pray that they may live to join us in our great Sisterhood.

The Falls City Lodges, 578, 502, 103, 297, 268, and L. S. 76 joined hands and gave a picnic at Glenwood Park, New Albany, Indiana, on the 26th of July. Dancing was indulged in; also various games and other amusements were enjoyed. Some of the brothers of 578 took the ladies out on the lake for a boatride, and also treated them to a round trip on the miniature railroad.

Everyone seemed to have a jolly good time, and no one went home hungry, for every table fairly groaned with the good things to eat.

The brothers and sisters are already longing for next summer to come, so they can have another grand and glorious time.

Kind wishes for all the sister lodges and for all those in whose interest we labor.

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FROM L. S. 116—(*Mrs. May Wagner, Baltimore, Md.*) While Pride of 214 has been silent for some time, we have not lost interest in the Ladies Society. We are pleased to say that we have a very good society. While we are not so large numerically as many of the sister lodges, yet all are faithful and good workers. I think that I am safe in saying that the members of Oriole Lodge No. 214 appreciate our little organization, and we want to thank them for their untiring efforts on our behalf, for on every occasion they do everything possible they can to lighten our burdens and interest themselves in everything that concerns the Ladies Society. We wish that the brothers would encourage their wives, mothers and sisters and daughters to join the society. If all that were eligible would join, why, we could be the largest and best society connected with the great Brotherhood, as we have a very large B. of L. F. Lodge here. Now, boys, do help us to be one of "The Big Ten."

For the first time in the history of our society we have had the occasion to drape our charter in mourning for a beloved sister, Mary Long. Sister Long was taken from our midst to that "beautiful haven of rest" July 9, 1905, after two days' illness. The officers and members of 116 desire to extend sympathy to Brother Long and son and relatives. The deceased had a large circle of friends and was loved by all who knew her. She was a charter member of Pride of 214, and her loss will be deeply felt by the entire membership, as she was one of our most active and faithful members. She was taken to her last resting place by the members of the society, who performed the last sad rites over her body. The funeral was largely attended, and the many floral tributes testify to the high esteem in which she was held.

Let us exemplify the teachings of our Order and let "Friendship and Charity" shine through our lives. Let us not forget the little acts of love and the little deeds of kindness that make life one long sweet song, in which no misery is ever blended. Let us live close to our noblest ideals. Do not look for errors in a brother or sister, but seek out the imperfections in ourselves. Thus life will be sweeter and brighter and the world will be brighter for our having lived in it.

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FROM L. S. 35—(*Mrs. Mabel Tullis, Tyler, Texas.*) The L. S. and the B. of L. F., on June 12th, celebrated their eighth anniversary together, and although it was our regular joint meeting day, not many of the brothers were present, as the fruit season rush is on and keeps the boys busy night and day. Nevertheless we had a delightful time and served refreshments of ice cream and cake. We have a new member to welcome into our Order, and expect three more in the very near future. If any of the sisters have a good recipe for calling out members to lodge on meeting days, please pass it down the line, with full instructions how to use it. We have a membership of nineteen members in all, and we usually have about six out to regular meetings. Sometimes we have meetings with closed doors, but we are on the outside. If the sisters would only get "the habit" of coming to lodge.

We have good joint meetings when the boys can come, and they always do their part showing us a good time.

I see by the August issue of the Magazine that some one has been busy. It reports nineteen new sister lodges. Lone Star No. 35 wishes them good luck and prosperity.

I must not forget to tell you that we have a "mascot." Our Secretary has a fine new baby girl, Mabel Lorraine. I am sure she will always attend lodge.

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FROM L. S. 97—(*Mary Reinhart, Secretary, Springfield, Illinois.*) Capitol City Lodge No. 97 has been quiet in the past, but we have decided to make ourselves known through the Magazine. We enjoy reading of our sister lodges and think that they perhaps will be pleased to hear that we are a flourishing society. We have taken in several new members lately and have more in view, and there are a great many who are eligible and ought to be of us, and I am sure if they knew of the good times we have they would not hesitate to join us. We have a splendid President in Sister McBee, and think that no one can fill the chair quite so well as she. She was again elected President for the coming year, and for faithful services for the many years past the members of the lodge presented her with our emblematic pin. Sister McBee was much pleased to be remembered, and responded in a very pretty manner.

A dance was given by the society some little time ago, and a neat sum of money was the result. We cleared for our treasury $37.60. A lawn social was given at Sister Wm. Nation's home on July 12th, from which we also realized a neat sum, more than two hundred being present. In March we gave a banquet for the boys of Crystal Light Lodge No. 408 and their families. The evening was spent in dancing and other amusements, and all joined in the merry-making whether they knew how or not. At a very late hour the guests, with many regrets, departed, thanking the sisters for their nice time. The evening proved a very enjoyable one.

In the future we expect to hold our social circle at each other's home every two weeks. We want to be sociable and not let our interest lag. This is my first attempt to write for the Magazine, and if this article finds space in your columns I will let you hear from us again.

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FROM L. S. 17—(*Mrs. M. A. Dunbar, Palmerston, Ontario, Canada.*) Perhaps some may think Wellington's Companion Lodge No. 17, Palmerston, Ontario, is dead, as she has not put in her appearance in the Magazine for some time. She is neither dead nor sleeping, but is wide awake in the interest of the Order.

The twelfth of August the death angel took our sister, Mrs. John Leaky. Sister Leaky's death was very sudden, and came as a shock to her friends and acquaintances, who loved her dearly, and words seem weak when expressing our sympathy to our brother, who is left with her two little sons to take up life in its loneliness. May the loving Father strengthen and sustain.

"Silently and softly we bore her to her
dark and silent bed.
Weep not that she is lost to earth,
Weep not that her spirit's fled.
One last look, one parting sigh,
Ah! too sad for words to tell,
Yet though tears may dim each eye,
Hope we still, and sigh, farewell."

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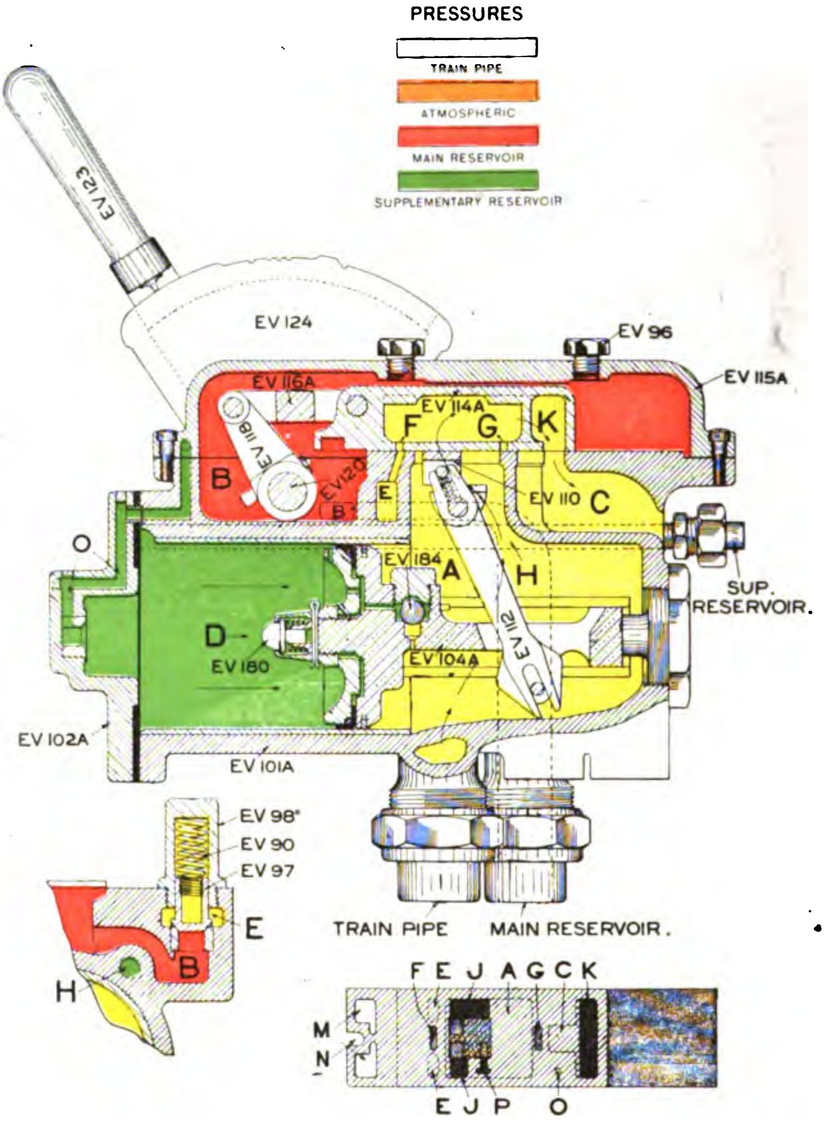
Death Report.

Mary O'Grady.—Lodge 44; died July 28, 1905; cause, consumption. Insurance, $200.

Annie Elizabeth Leaky.—Lodge 17; died August 12, 1905; cause, peritonitis. Insurance, $200.

Sallie Faust.—Lodge 114; died August 30, 1905; cause, typhoid fever. Insurance, $200.



Locomotive Firemen's Magazine Educational Charts

NEW YORK AIR BRAKE SERIES

PLATE XII—ENGINEER'S BRAKE VALVE, STYLE B
(Emergency Position)

Entered December 4, 1902, at Indianapolis, Ind., as Second-class Matter, under act of Congress of March 3, 1879

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Plate XII—Engineer's Brake Valve, Style B (Emergency Position).

Plate XII of the New York Air Brake Series of the Locomotive Firemen's Magazine Educational Charts shows the brake valve in emergency position.

This position is used to apply the brakes when there is danger of accident to the train; also, when there is danger of injury to persons and of loss of life or property.

The diagram of the valve face and seat (lower right hand view) shows the large brake pipe exhaust ports *J* and *K*, in the main slide valve in communication with the exhaust port *C* in the valve seat, and in the view of the valve body, the arrows indicate the direct escape of brake-pipe air to atmosphere.

The arrangement of the ports admits of a quick, heavy reduction being made in brake-pipe pressure, which is necessary to produce quick serial action of the quick-action triple valves, and to apply the brakes with full force. When necessary to apply the brakes in emergency the valve handle should be left in emergency position until the train stops or the danger is passed. On long freight trains if the speed reduces to twelve miles per hour or less, and the engine is not equipped with the straight-air brake or other efficient means for holding the slack bunched, it is better to allow the train to come to a full stop before releasing, so as to avoid the danger of breaking in two.

Piston *EV 104A*, in emergency applications, is moved forward by the chamber *D* pressure, as shown, but does not in any way affect the escape of brake-pipe air, since service ports *F* and *G* are moved to a position beyond the control of cut-off valve *EV 110*.

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*Slide Valve Versus Piston Valve.**

The use of the piston valve in locomotive work is not as modern as many seem to think, having been used as long ago as 1833, and since that time there have been numerous revivals at various periods; but like some vaccinations, they did not seem to take until within the last few years, and whether they are to become a fixture and force the D valve to the museum remains to be seen.

Before going further it might be well to say that inquiries of several of the leading roads using large numbers of piston valves, fail to bring out an expression as to which type of valve is doing the better work, the slide or the piston valve. They will say that they are both doing good work when properly designed. The design of the valve and cylinder has a great deal to do with the performance of the engine. A poorly designed slide valve will do poor work as well as a poorly designed piston valve.

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*Paper by Mr. L. S. Allen, presented before the convention of the Traveling Engineers' Association at Detroit, Mich., September 12-15, 1905.

As we have a great many piston valves now in use, let us see what the merits of this valve are over the D slide valve. There are two types of the piston valve; inside and outside admission. These are modified, some being solid and some hollow. It is this modification that brings about the difference of opinion as to their respective merits.

There have been a great many broken frames and cylinders attributed to the piston valve. I firmly believe that had the trouble been looked into more carefully, they would have found some weak points in the construction, as no provision had been made for special relief in case of any over-pumping, condensation or careless handling of the engine by the engineer.

I have known of a great many cases where engines have been equipped with new devices, and if any trouble arose with the engine that could be laid against the new device, it was generally done, because it was something new.

Most all modern piston valve engines of today are of the heavy type with cylinders much larger than were formerly used, and in a great many cases the enginemen have not taken the care of them that they did of the smaller power; but after the engines have been in service for a while the men become accustomed to them, and the trouble generally disappears. I have seen many frames and cylinders break on heavy power, and they were not equipped with piston valves, either. I can see no reason why the frames and cylinders on piston valve engines, if properly designed, are subject to breakage any more than the slide valve engines, if proper provision is made against careless handling.

There are about four essential points to be considered in the piston valve over the slide valve, namely—cost, maintenance, steam distribution and fuel economy.

Cost.—There seems to be no question that the first cost of the piston valve is less than the slide valve on simple engines, and where four-cylinder compound types of engines are used, it takes the place of two valves and reduces the motion to that of a simple engine.

Maintenance.—With the piston valve we get a better balance of the valve, which makes it easier to handle and decreases the wear and tear on the motion work. With the increased size of engines and steam pressure the ordinary D balance valve increases in size proportionately, and while we may balance a slide valve in the same ratio as to valves on smaller engines, the difference in the unbalanced surface increases with the size of the engine, and this increases the wear on the valve, link motion and eccentric straps, and increases the work necessary on the part of the engineer to handle the engine. This being a fact, I have experienced a great deal of trouble keeping the valves on our slide valve engines square, while on the other hand we do not experience trouble of this kind with the piston valve until after the engine has been out of the shop for a long while and the parts become badly worn. With the use of the inside admission piston valve we do away with the metallic valve stem packing, which means a great saving, as we only have the exhaust pressure on the packing side, and the fibrous packing answers the purpose and lasts a long while.

With the slide valve on large power we can hardly exceed 25,000 miles before the valves need facing, and ofttimes sooner than that. When this has to be done, it means the loss of the use of the engine for a day at least with a cost of $12 to $14 for labor, while with the piston valve if the rings are broken or need attention the valve can be removed, new rings applied in from thirty to forty minutes, and the engine is ready for service again. No doubt the question will be asked, "Do the bushings ever wear?" To this I will say, "Yes," but I have never seen a bushing that will not run from shopping to shopping, and they generally run 200,000 miles without re-boring, which is nearly always done while the engine is in the back shop.

Another advantage of the piston valve over the slide valve is the accessibility to its parts. When an engine needs its valves reset after running some time, the port marks on the valve stem become obscured, and possibly the man who is about to do the work has a different tram or wants to get different marks on the stem. With the slide valve engine the machinist has to use the block and tackle and raise the covers of the steam chest before he can make his new marks, while with the piston valve he simply has to remove two plugs on each end of the chest leading directly to the edge of the steam port. This means a saving of time, and time is valuable in a busy shop or roundhouse.

How often is it that an engineman will come in and report a blow in the valve? After the machinist has used his block and tackle, raised the cover, examined the valve and then finds nothing wrong, an hour's time has been wasted. Finding nothing wrong on that side of the engine he will undoubtedly go to the other side for the trouble and spend as much time again in raising the other cover. Were it a piston valve these examinations could be made in an hour's time by a machinist and helper.

It is claimed by many that what we gain in the maintenance of the piston valve we lose through the leakage of the packing rings. No doubt, there are some leaks through the packing rings in the valve as they or the bushing become worn; but, on the other hand, how many times are slide valves slightly cut and allowed to run in this condition until they wear themselves smooth again? And while they are wearing themselves smooth the engineer will double the amount of oil to the valves and cylinders to prevent the lever from driving him out of the cab.

Another thing in favor of the piston valve is that there are no steam chests to break or gaskets to leak, and all the oil used goes directly to the valve and cylinder.

It has been claimed by some that the piston valve engines ride very hard, that it is impossible to keep them from pounding, and that they shake themselves to pieces.

There may be several causes for a hard riding engine. In some cases that I have known, hard riding engines charged to piston valves proved to be badly counterbalanced.

Engines set with too much lead will ride hard, or if set too late will cause them to pound.

Again, the cylinder and valve may be poorly designed. If it has too little clearance, with a slide valve, when compression takes place the valves can rise from the seat, and thus relieve compression; but with the piston valve there is no such relief, and this will cause the piston valve engine to ride hard and may do damage unless proper means are provided for relief.

On the other hand too much cylinder and valve clearance will cause an engine to pound through not having sufficient compression to balance the reciprocating parts, assuming that the cylinder and valve clearance are right. Then a faulty design of piston valve will invariably cause trouble. The inside admission solid valve acts as a piston for each exhaust and takes up the slack in the valve motion, and increases the lead; this is very hard on valve gears and makes the engine ride hard.

The difference of pressure on the two ends of this type of valve often amounts to over a ton, for the moment after exhaust takes place the outside admission solid valve becomes unbalanced on the admission side, as the steam enters the cylinder, and the high pressure at the opposite end takes up the slack and decreases the lead as the valve gear wears.

In the outside admission hollow valve the area of the valve stem unbalances this type to the extent of about 600 pounds at a 200-pound boiler pressure, and always in the same direction, which causes the engine to go lame as the gear wears.

Now, with the inside admission hollow valve these defects are absent, and the valve is so well balanced that it works easily and requires less power from the cylinder to operate than the slide valve. Tests made by the C., B. & Q. Railroad demonstrated that the relative frictional resistance was only about half as much in a piston as in the slide valve.

It is also claimed that the piston valve engine will not run as fast as the slide valve engine. If this is true it is because of faulty design; for an engine intended for fast running the cylinder and valve clearance should be greater than for slow, heavy work. The faster the service the greater should be the cylinder and valve clearance.

Of inside admission piston valves there are two classes, viz., the solid and built-up types.

The solid valves use snap rings, which must of necessity be light section. When steam gets under these rings of light section it causes them to expand into the ports, and unless the corners are well rounded it may cause them to catch and break the valves or rings, or both.

On the built-up type the rings may have a heavier cross section and the body of the valve may be cut away so that L-shaped rings may be used, which gives a better admission of steam. Then in case it does break it is only necessary to renew the part that is broken, instead of the entire valve.

It has also been said that the piston valve engine will not steam as well as the slide valve engine. I can see no reason why this should be so, as it has never been the experience of the writer to find this a fact.

In regard to the lubrication of the piston valve it has been my experience to find the piston valve much easier to lubricate than the slide valve, and where engines have to drift for a long distance it is found to be a good practice to lower the lever in the quadrant to about half way and to admit just steam enough to the cylinder and valves to carry the oil to the walls of the bushings and cylinders. I think the better practice of oiling the piston valve is to carry the oil to each end of the valve, and as the valve travels back and forth the oil goes directly to the wearing parts. This is done by having a bracket pipe leading to each end of the valve bushing from the main oil pipe. Care must be taken, however, not to drill holes in the bushing so that when the valve is standing in exhaust position at full travel the holes will come in communication with the exhaust port, because then every time the engine exhausts the oil in the pipe would be carried away with the exhaust steam.

Steam Distribution.—With the piston valve we get a much larger port than with the slide valve, and this large opening gives a better admission and release of the steam to and from the cylinder than can be obtained by the slide valve. However, I have been unable to obtain any indicator cards that are comparative; but where the valve gives such a large port opening, both to the steam and exhaust, there seems to be no question but what we get a better admission and release. It has been claimed by some that the steam is wire-drawn, on account of the beveled shape of the valve on the admission side; but the increased area of the port overcomes this, as it does not show on indicator cards taken with this style of valve. The modern packing ring is made in an L shape, which gives at least one-quarter inch perpendicular opening to the steam port, and helps to give a better admission.

With the slide valve the Allen port was introduced, to get a better steam admission, and, while this did help at a high cut-off, it is practically of no use in starting. While this supplementary port helps the admission of steam to the cylinder, it has no effect upon the release, as these supplementary ports do not come into play while the engine is exhausting. It is also necessary with the Allen ported valve to have the valves set with considerable negative lead in full gear forward motion, on account of the lead increasing so fast as the engine is connected that when it is in the working notch without this negative lead it would have so much lead as to be a detriment. Consequently, while this port is helpful to a certain extent at high speeds it produces an engine very slow to start a train; while with the piston valve this does not occur, as the opening is very large in the corner, as well as while hooked up.

There were some piston valves built with the supplementary port, but they have never come into general use, and the only slide valve known to me that provides for a double exit as well as the double entrance for the steam is the Wilson valve, which takes care of both. It seems to me that the existence of these various devices demonstrates the recognized importance of giving the steam the greatest opportunity for rapidly entering and leaving the cylinder, the object being to raise the pressure in the cylinder as near as possible to boiler pressure and decrease the exhaust or back pressure, and thus increase the work done by the engine.

With the piston valve we are able to use a shorter port than with the slide valve, and as the clearance indicates the area of the port between the valve and piston, when on the center, the shorter the port the less the volume of steam to fill from the boiler at each revolution. However, it has not been found practicable to use less than six per cent cylinder clearance with the ordinary piston valve.

Another feature of the inside admission valve is the protection to the live steam by being jacketed by the exhaust cavities, thus delivering the steam to the cylinder at a much higher temperature than would be done with the slide valve or outside admission engine. This is a very important point, as the superheated steam is a recognized feature nowadays for economy, and the drier the steam when it enters the cylinders, the more work we can get from it.

Fuel Economy.—In regard to the economy of the piston valve over the slide valve in the use of fuel, I can not say that there is practically any difference, or should be any difference, unless it should come about through being able to longer keep the valves square; when they are kept square our men will generally try to work them at the highest point of cut-off consistent with the work to be done. Otherwise they will generally work their engines where they sound reasonably square.

It was the impression at the recent Washington Railway Congress that a fuel economy of about 10 per cent. resulted in the piston valve over the slide valve. I am not able to produce any figures that would show this; but in summing the total of my personal experience and investigation I think a great deal of the fuel economy, if there is any, in the piston valve, comes about through the fact that most all engines equipped with the piston valve are of recent date, and have a more liberal heating surface than was allowed to many of the slide valve engines of earlier date.

I do not wish to convey the idea that all piston valve engines are better than the slide valve engines, but, as I have said before, I think the design of the valve and cylinder has a great deal to do with the performance of the engine, and as I have outlined in this paper the defects of the different types of piston valves, I personally think that there is only one type of piston valve that will give good results under all conditions, and that is the inside admission hollow piston valve.

A New Locomotive Appliance.

A common belief among motive power officials and locomotive enginemen has been that the admission of air to the locomotive front end interfered with the steaming qualities of the engine, besides causing cracks to appear in the door and sheets forming the ring of the smokebox. Great care has been exercised to prevent such admission of air by sealing the joint between the door and front, and by planing the joints formed by clean-out plates so as to be perfectly air tight. In contradiction of this long established theory a new locomotive appliance has been brought out by the American Locomotive Appliance Company, of Washington, D. C., which has for its purpose the admission of air to the front end under certain circumstances. The following, together with the illustrations shown, are reproduced from a circular issued by the company:

HELPER ENGINE "LONG TOM," CASCADE TUNNEL, GREAT NORTHERN RAILROAD

This device, called a "Locomotive Draft Regulator," has been developed and perfected in actual service trials extending over a period of several years and including twenty equipments. In no instance has it failed to fully demonstrate the claims made for it, and to justify the faith of those whose means have made this development possible.

As its purpose is accomplished by admitting air into the smokebox, under certain circumstances, hereinafter explained, the fear is invariably expressed by railroad operators that the steaming of the engine will be interfered with. A little reflection should convince them that this idea is erroneous. The engine can not "tear its fire," nor blow the fuel from the grates; while the sharp explosive effect of the exhaust *is neutralized* by the instant admission of air, it is but for a moment with each exhaust, the effect being a more elastic draft *and better combustion.* Also, during the act of stoking, a constant current of air enters the smokebox through the air-trap, drawn in by the exhaust and out the stack, thus preventing its entrance at the firedoor and into the flues, relieving them of the injury incident to repeated changes of temperature. It is also feared by the gentlemen referred to that air admitted into the smokebox will cause combustion in that chamber and great damage to parts located there. A moment's reflection will certainly show that *this is impossible.* The manner of admitting the air not only makes it impossible, but *it is a perfect security against hot or broken fronts.* Air is admitted at the top of the chamber, and just as air admitted into the door of an ordinary coal stove checks or stops combustion and cools the stove off. *So air admitted into the upper part of the smokebox prevents combustion* and with perfect certainty protects the front from heating and cracking.

The manner of producing the forced draft of a locomotive in exhausting its steam through the stack accomplishes the desired object, but with great waste of fuel and other injurious effects.

The appliance herein described is intended to correct or at least minimize these evils. That it does so in all cases largely, and in some effectually, is a fact well demonstrated in actual service, and upon its merits alone, as shown, it is now offered for use to those interested in the management of railroads. It is simple and durable in construction, automatic in action, easily applied, requires no attention from engineer or fireman, except a little oil at one point occasionally, efficient in the results produced, and should commend itself to mechanical engineers whenever it is examined by them.

The Locomotive Draft Regulator, as stated, admits air at certain times into smokebox. That is all.

It does so to neutralize the sudden heavy pounding effects of the exhaust, and to reduce the volume of cold air that enters the furnace when stoking, the means for regulating this inflow of air being ample, convenient and certain of action. It admits air at the moment the firedoor opens and continues to do so until the door closes.

Secondly, it admits a puff of air into the smokebox of greater or less volume every time the engine exhausts and in proportion to the *force* of the exhaust. The effect is great improvement in the performance of the engine and general economy in cost of maintaining and operating.

The machine being entirely automatic and requiring no attention but occasional oiling of the air cylinder piston rod, *should be kept in continual operation.*

In such service it is guaranteed—

1st. To reduce waste of fuel by from 6 to 10 per cent.

2d. To prevent absolutely hot or broken fronts.

3d. To lesson largely trouble from flues leaking.

4th. To practically eliminate danger of fire from sparks.

5th. To reduce volume of black smoke.

Many tests of fuel performance have been made with the draft regulator to ascertain its saving capacity. The different trials giving from 6.5 to 9 per cent.; the most carefully conducted giving 7.44 per cent. To tell at a glance what this means the following tabulated statement is given covering a range of from 5 to 8 per cent., with the prices of coal prevailing in many parts of the country. The calculations being based on an assumed average annual consumption of 2,500 tons per engine.

Price		Saving at			
Per Ton.	Total.	5%.	6%.	7%.	8%.
$1.00	$2500	$125.00	$150.00	$175.00	$200.00
1.50	3750	187.50	225.00	262.50	300.00
2.00	5000	250.00	300.00	350.00	400.00
2.50	6250	312.50	375.00	437.50	500.00
3.00	7500	375.00	450.00	525.00	600.00
3.50	8750	437.50	525.00	612.50	700.00

Considering the other named and demonstrated advantages, and the manifest durability of the machine, and that these benefits are not offset by the least possible disadvantage, we invite a careful consideration from those whom they may and should concern.

The draught of a locomotive produced by the exhaust of steam from the cylinders under great pressure in intermittent blasts into the smokebox and through the stack is frequently so great that it lifts the fuel from the grates and causes a rush of small particles of coal from the firebox through the flues into the smokebox, much of it out the stack, and such particles as are burning often cause destructive fires to property. The effect of this character of draught is often injurious to the steaming of the engine. It is most injurious when starting from stations, and at such other times as the engine is pulling heavily. Coal is constantly leaving the grates and moving forward, piling up against the flue sheet, with injury to the flues, exposing the grates, leaving holes in the bed of fuel through which air rushes, lowering for the time the rate and effectiveness of combustion with loss of steam and necessitating constant attention of the fireman.

(It may be interesting to know that in the tests of this appliance, where every pound of coal used and all sparks taken from the smokebox were carefully weighed, the sparks were found to equal 8 per cent. of the coal, and as of course much was blown from the stack, it may easily be imagined that, in all, the loss of fuel in the form of "sparks," which are but unconsumed particles of coal, could easily have been 10 per cent. or more in locomotives as now used.)

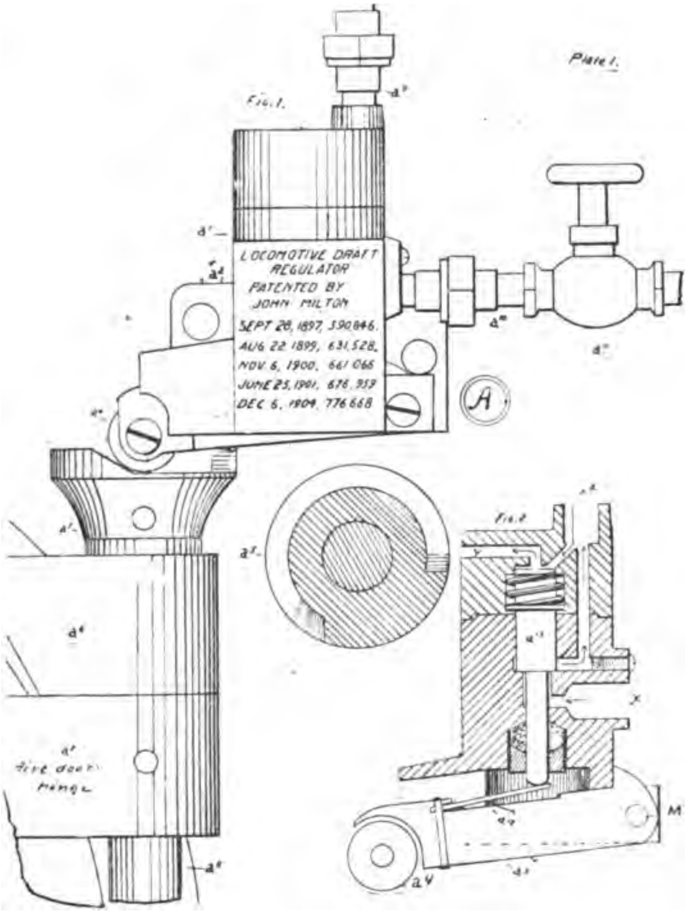

Plate 1. Locomotive Draft Regulator

The Device.—Broadly speaking, the draught regulator is a structure located in the smokebox, and connected with the door *DD*, Plate 3, in the center of which a hole is bored for its accommodation, and to which it is securely fastened, the joints being air tight. It constitutes a tubular opening or passage for air into the smokebox, closed normally at its inner extremity by an inwardly opening hinged gate.

This gate or trap, as at present used, has a full open area of about seventy square inches. Normally it remains seated or closed. It is held to its seat by means of a spiral spring encased in cylinder *B* and connections.

Description.—In detail, the draft regulator consists of three principal parts, designated as *A*, *B* and *C*. *A* is an air valve secured to a bracket, which is bolted to the door frame. This valve is operated by a lever and roller, shown in Plate 1, and a cam secured to the top of the firedoor pintle or hinge rod, the purpose being to open the air valve the moment the firedoor opens and to hold it open till the moment that door closes, when the valve returns to its original position, an action produced by the cam. A ⅛-inch air pipe connects this valve at *X* Fig. 2, with the reservoir pipe of the air-brake system, the connection being made between the reservoir and the cut-out cock. The pipe, extending forward over the boiler, connects the valve referred to with cylinder *B*. A globe valve stands open when in use to admit air to valve Fig. 2, by which is opened a minute air passage to pipe mentioned, just as the firedoor begins to open, and closes it just before the door is fully closed. This closing cuts off air port *X* and opens in instantaneous succession exhaust *Y*. By this means compressed air is admitted to cylinder *B*, and by its action the large air gate *C* is opened. This movement is so quick that the opening and closing of the firedoor and gate *C* are practically

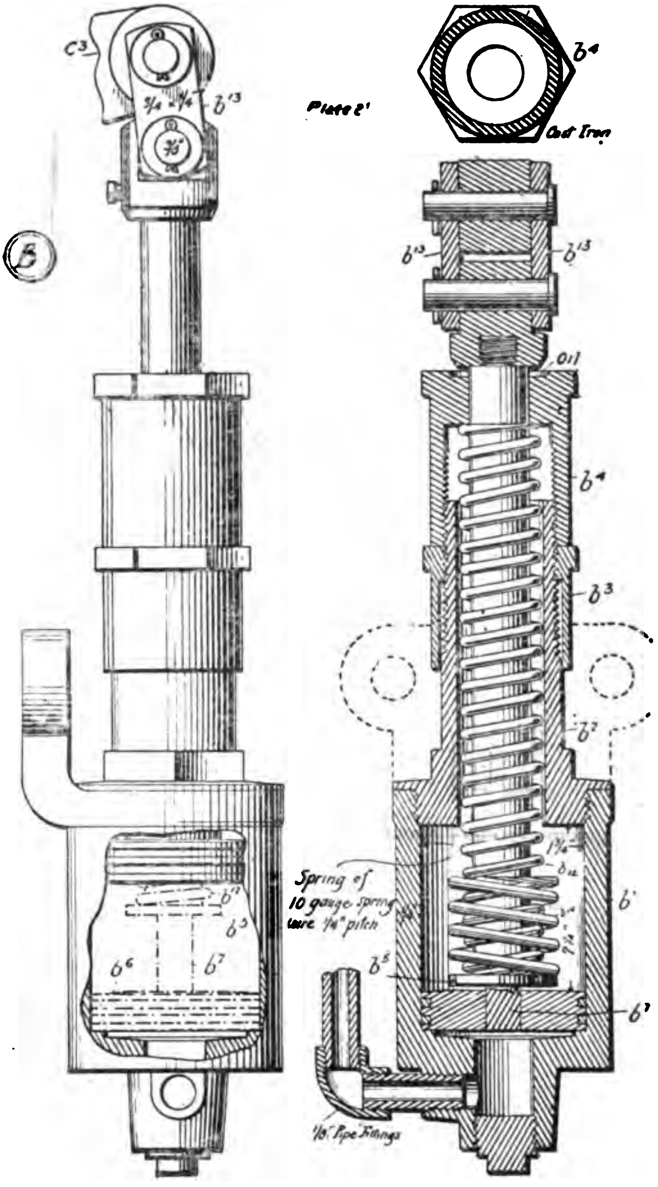

Plate 2. Locomotive Draft Regulator

coincident, due to the velocity of air under high pressure. The position and purpose of cylinder *B* will be understood from the illustrations sufficiently well for the purpose of this paper. The object of valve *A* is simply to control the passage of air to and from cylinder *B*, and in turn cylinder *B* through this means opens and closes air gate *C*, the action originating at the firedoor. A spiral spring seated in the upper part of cylinder *B* is compressed when air is admitted under the piston, and reacting, when the firedoor closes, expels the air from cylinder *B* through exhaust *Y*, and gate *C* closes. These are the movements produced by the opening and closing of the firedoor. The pressure of C^2 to its seat is regulated by the compressing nut b^4 *and jam nut* b^5.

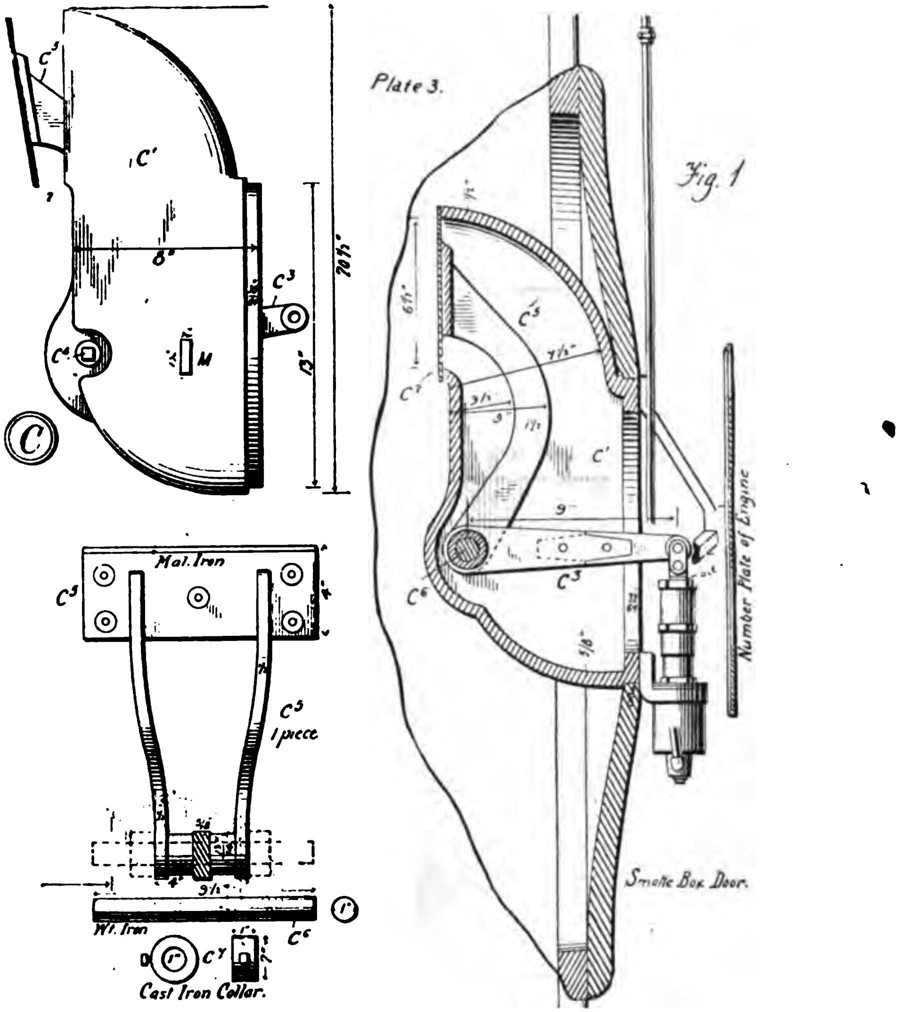

Plate 3. Locomotive Draft Regulator

When a sufficient measure of vacuum is created in the smokebox by the exhaust of steam the external air pressure forces C^2 open to position shown by dotted lines, or less, according to its force. This of course compresses the spiral spring referred to, which, in turn, reacts instantly and closes the gate, it having been open only a moment, but long enough to neutralize in large part the injurious effects of the exhaust through means of the opposing current of air thus admitted into the smokebox.

An auxiliary or check spring b^{14} is placed in this cylinder as shown in Plate

2; it encloses spring B^{12} at its lower end and operates only at times to hasten return of C^2 to its seat when engine is exhausting very rapidly by pressing against the shoulders of b^2 when the piston rises suddenly.

Plate 4 is designed for use where the smokebox door is held by one central clamp. It is a cheap construction. The air trap being cast in the upper part of the smokebox door, otherwise it is the exact counterpart of the previous representations and performs the same duties. It is especially applicable to the usual foreign construction, or it may be used to advantage when a railroad prefers to construct its own machines.

FIG. 1

FIG. 2

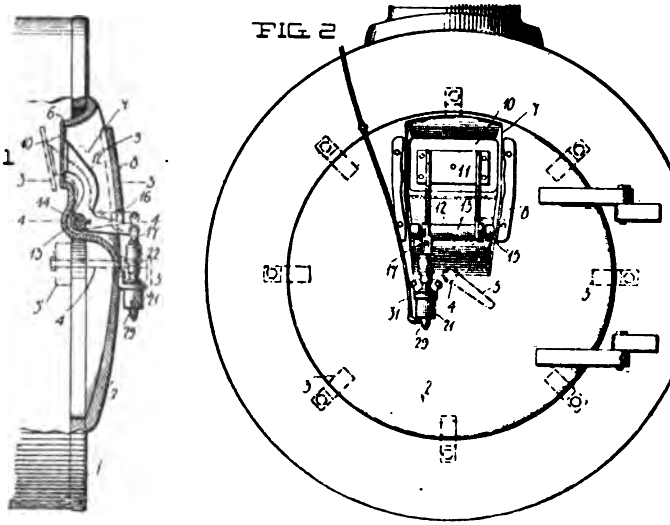

Plate 4. Locomotive Draft Regulator

The foregoing will make clear to mechanical engineers and others in railroad service the construction and operation of this device. Its use, while giving economical results, involves no trouble or harm of any kind. No change in the locomotive; not a scratch on the boiler; no extra work to engineers or firemen. Not the least apprehension need be felt on this account. This has been attested in various reports by railroad officers in charge of the many trials made by the device and after long experience in its use, and will be shown wherever used.

Practical Results.—The full measure of efficiency of the appliance described above can not be understood without careful consideration of the whole field of its usefulness. As stated, the harmful effects of the draught of locomotive engines are waste of fuel, injury to flues, and frequent firing of property through sparks blown from the stack. To these may be added constant and serious loss in boiler fronts and doors of smokebox from heating and time required for repairs. So far, then, as it is true that the bad effects named are due to the sudden, impulsive and excessive draught, and of air going into the firebox, it is undoubtedly true they are lessened in proportion to the extent that this character of draught is changed and made more elastic. Except as to fuel saving there is at present no way of knowing the degree of economy effected by the use of this device.

In the latest equipments there is apparently perfect combustion of all fuel entering the firebox, and slight if any loss from sparks has been reported.

This showing is suggestive, and when compared with the actual cost of effecting it, it is extremely so. The question then for consideration is the certainty of the results and the cost of obtaining them.

The actual benefits secured by the use of the draught regulator are those often sought by other means, but past efforts have mainly failed.

All the foregoing claims are substantiated by railroad men who have witnessed the device in use. The writer has usually been personally present at the trials of the device, and is responsible for the statements herein made.

The draught regulator has been in actual service covering a period of over six years. There have been made twenty equipments, and the equipped engines have aggregated on the different roads over three hundred and fifty thousand miles. They have recorded no failure nor trouble of any kind, economy being the invariable result. The repairs were of minor character, involving no difficulty, and but slight cost. While requiring for its operation air from the brake reservoir each time the firedoor is opened, the volume is so small that no effect on the supply has ever been visible. It will be noticed that while the device requires most air for service on up grades because of constant stoking, the brakes at such times require the least, and vice versa.

* * *

*What Devices for and Arrangement of Engines Will Lighten the Work of the Engineer and Fireman?**

In taking up the subject of how to reduce the labor of the locomotive engineer and fireman we believe that anything that will contribute to the comfort of the men on the locomotive will have the same effect as reducing their labor.

The first suggestion that comes to mind is the keeping up of the locomotives. They should be kept in the best possible condition at all times. We all know from experience the wearisome result of riding an engine that is run down to such an extent that the back shop would be a far more suitable place for it than out on the road; also, the worry that goes with trying to get over the road and make good time with an engine of this kind.

In the first place, there should be a regular engineer and fireman for each engine, if possible, and the practice of pooling engines discouraged wherever it is not absolutely necessary on account of shortage of power.

The engines should be thoroughly cleaned after each trip. This can be done with comparatively little expense to the company and the money spent in doing it will prove a good investment, inasmuch as it will be an inducement to the men to take better care of the engines, and will also assist them by making it easier when inspecting the different parts for them to detect any defect that may exist and that they can have remedied before going out on another trip.

On the large locomotives of the present day it is almost, if not altogether, unreasonable to expect the fireman to do very much cleaning in addition to shoveling the amount of coal necessary to move a heavy freight train from one terminal to another, and we believe that a fireman should be relieved of all cleaning on large consolidated engines, except the cab. This he should be required to keep in a good, presentable condition. He should also be required to keep the boxes of the tender, where the supplies are kept, in a good condition.

The engineers on large consolidated engines should be relieved of the care of the wedges, as it is almost impossible for a large man to get under one of them when they are out on the road, besides being very dangerous, owing to the small space that he has between the drivers to get under them.

There is no reason why they should not be required to key the rods where keyed rods are used.

There should be suitable rest houses provided at all terminals, with washroom, lounging room and sleeping room, kept in a cleanly condition at all times, so that the men could take advantage of the time between runs to rest up and be in a better condition for the return trip. However, rest houses do not pertain to the arrangement of the engine and tender, although we think the suggestion a suitable one for the place.

The cab roof should be so arranged as to prevent the water from running down over the sides of the cab and the necks and backs of the engineer and fireman every time they are compelled to put their heads out of the window in a storm. The cab should be provided with a small wing window on each side to protect the eyes of the engineer or fireman when looking ahead in a storm. Such a window could be made of a light of glass 6x18 inches, framed and attached to the outside of the cab by hinges.

All injector valves should be within easy reach of the engineer or fireman; preferably, both injectors on the right side of the engine. The brake valve and throttle lever should be within easy reach of the engineer when looking out of the side cab window. The reverse lever should be located where the engineer could throw it to either extreme without being obliged to get on the seat box. The whistle lever should be within easy reach of the engineer without him being required to stand up to sound the whistle. There should be a hose attachment on the branch pipe of at least one injector, to enable the fireman to keep the coal wet and prevent the dust from flying around in the cab. The oil can tray over the firedoor should be shaped properly, so as to shade the eyes of the engineer when the door is open. The lubricator should be located far enough from the roof of the cab to give good clearance to the oil can when it is beng filled. We have seen lubricators placed so near the roof of the cab that a special can had to be made in order to get at them.

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*Report of committee presented before the convention of the Traveling Engineers' Association, at Detroit, Mich., September 12-15, 1905.

Lubricator feed valves of the engine should have a gauge of some sort to enable the engineer to set the lubricator feeds without having to count the drops. The front cab windows should be large enough to permit of the engineer or fireman passing out through them when necessary, and should be of a good quality of glass, in order that they may be able to see accurately any object ahead of the engine. There should be a window located on each side of the cab so that they can see the top of the stack at all times. The grate-shaking rigging should be located in the deck of the cab where the grates can be shaken at any time while the engine is running, and the grates should be so arranged as to make them shake easily. The steam gauge and air gauge, especially the air gauge, should be placed where the engineer can see it at a glance in daytime or night. All cab lights should be so arranged as to throw light on gauges and water glass, in order that they might be read properly without the engineer or fireman having to leave their seats to do so. The engines should be provided with pneumatic bell ringers and sanders.

The tenders of coal-burning locomotives should be so arranged that the coal space would be in the shape of a hopper, and the rear plate have sufficient pitch that the motion of the engine running along would keep the coal working forward within easy reach of the fireman. The manhole on top of the tank should be oblong, in order to overcome the necessity of having to stop the engine at exactly the right spot to get the water spout in the hole. All supply boxes should be so arranged as to be accessible from the gangway.

On oil-burning locomotives the handles of blower, heater, atomizer and firing valves should be on left side of the cab, where they will not obstruct the room between the boiler head and cab and within easy reach of the fireman on the seat box. Valves for controlling flow of steam to heater box, direct or indirect heater, or to blow dirt out of burner, and valve to drain water out of oil tank, should be placed so they can be operated from either the deck of tender or engine. Provision should be made so that brick or any other obstacle that may form in front of the burner can be removed from engine deck.

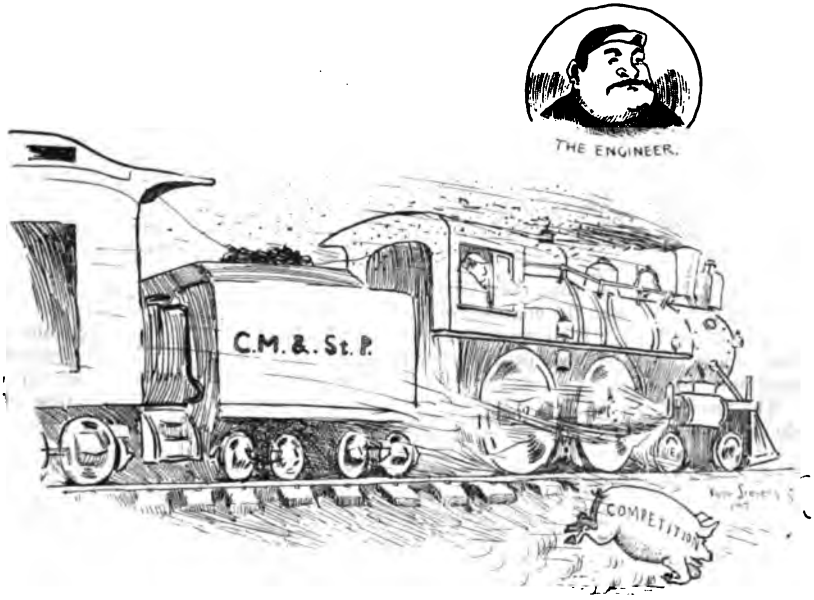
Levers to side, front or back dampers should be within easy reach of the fireman. Cable to safety valve in oil tank should pass through cab to outside, so it can be reached from either running-board if necessary. We would recommend the use of flexible joints for steam and oil connections between engine and tender. Best results are obtained by keeping regular crews on engines.

One of the best labor-saving devices we have found for a long time is the pneumatic fire-door operator. The operating lever is placed in such a position on the deck of the cab that the fireman by placing his foot on it opens the door, by moving his foot away the door is closed, thus insuring the swinging of the door between shovels of coal and also preventing chilling of the flues by permitting the door to remain open longer than is necessary. A device of this kind should be applied to each locomotive.

Where ash-pans have to be cleaned along the road they should be made with drop bottoms which could be operated from the cab, as the practice of crawling under engines on the main track for the purpose of hoeing out the ash-pan is not only inconvenient but dangerous.

In presenting these suggestions as to the construction of the locomotive and tender it is scarcely necessary for us to take up any of the valuable time of this convention in explaining why these suggestions are made. In nearly every case the reason why should be very plain to each one of us, as we all know from our own personal experience that it is absolutely necessary for the engineer to keep a constant lookout on the track ahead of him, especially when engaged in the fast passenger service of the present day. For instance: A train running at the rate of sixty miles per hour, which is a very ordinary rate of speed for passenger trains of the present time; would travel at the rate of 88 feet per second; while the engineer turns around for the short space of five seconds to apply an injector his train would have run exactly one-twelfth of a mile, and five seconds is not an excessive amount of time to be used in applying an ordinary injector. This does not apply to the injector alone, but to all of the valves in the cab that have to be operated while the locomotive is in motion. They should all be placed within easy reach of either the engineer or fireman to avoid the necessity of them having to turn around to operate them.

In regard to the air sander: This is not only a labor-saving device for the engineer, but will pay for itself in a short time in the economy resulting from the saving of sand and the labor at the sand-house, besides the satisfaction in knowing that we are not going to run out of sand half way over the division on account of having to run out more sand than is actually needed, by pulling the sand lever and opening the valves wider than is necessary to let down sufficient sand to keep the engine from slipping, which is not only a waste of sand, but will cause the train to haul harder than it would if but a slight sprinkling of sand were used.


THE ENGINEER.
C.M.&.St.P.
COMPETITION

The Southwest Limited

The glass in the cab windows should be of a good quality, without flaws in it to distort the appearance of any object that may loom up in front of the engine.

Not having had any experience with the automatic stoker, we will not attempt to comment on the advisability of its use. However, the subject has been very thoroughly handled by the Master Mechanics' Association at their convention in 1904, the report of which may be found on page 367 in the proceedings of that convention.

Committee—D. D. Kessler, Chairman; A. S. Meade, A. J. McKillop, William Daze and P. J. Miller.

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The Southwest Limited.

The following from the pen of Mr. Ed. H. Smith, of Chula, Mo., and illustrated by Mr. Victor E. Stevens, is a most interesting and, of course, an absolutely accurate (?) description of a new train recently put in service on the C., M. & St. P. Ry.:

The new train on the Chicago, Milwaukee and St. Paul Railway passed through Chula for the first time Sunday night about three hours after dark. There was no hesitation at Chula town, at least none perceptible. There are no high places in Chula town, hence we question whether she ever touched the track. She just ripped a great fiery hole in the darkness and left the atmosphere heated steam hot for a second, then whistled for Niantic or Chicago, we are not certain which. If "Central" had not been closed we would have telephoned to Chicago to see if she hadn't run clean through the Union Station. She is sure 'nuf a "hurryup train." Chicago is only about three miles up the track now. She is a gleam of summer sunlight, vestibuled and electric lighted from the cow catcher clear back a hundred yards behind the last coach. She is knee deep with velvet carpets, and her cushions are as soft as a girl's cheek. She is lighted to a dazzle and heated to a frazzle. She was built to beat the world, and her gorgeous splendor makes us chuckle to think we have a pass on her. She goes so fast that the six porters look like one big fat nigger. She is called "The Southwest Limited."

She stops both ways at Chillicothe, and you can get on her there, but, you'll have to hurry.

* * *

Comparison of American and European Railway Service.

The New York Commercial has published the following interview with an employe of the Delaware, Lackawanna and Western Railroad regarding train service in Europe:

I traveled with two ladies from Bremen to Leipzig, first-class. In the car wherein we left Bremen the plush was pretty well worn and faded, and the whole outfit created the impression that it would be the better for renewal; so much so that the ladies, who were traveling on second-class tickets and having been put in first-class on account of the train being crowded, could hardly believe that they were traveling in the best to be had when I called their attention to the fact. In Hanover we had to change into the through car. The compartment, again first-class, was somewhat better, but the car was sorely in need of cleaning, and especially the toilet, which was so filthy that it looked as if it had not seen a broom or scrubbing brush for weeks, and surely the dirt could not have accumulated during the run from Vlissingen to Hanover.

Ice water was entirely unknown, but at almost evèry stop beer was served to whoever felt like gulping a glass down before the train started. I certainly missed our clean, comfortable Pullman cars, and am sure that even on our suburban trains by far better accommodation is given than over there on through service. Besides, our cars travel more smoothly, because our equipment is heavier, so much so that a brother who visited me not so very long ago and who has traveled very extensively in Europe, remarked about it.

One thing, however, which I found on through trains from Dresden to Berlin might be worth copying for use in our day coaches on through trains, and that is automatic towel and soap supply, all for a nickel. Another point for which I must in justice give credit was that all trains were invariably on time.

As to transportation of freight, the following schedule obtains: (a) Fast freight, one day handling, i. e., billing, loading, etc., and one day for every 186 miles or fraction thereof; (b) ordinary freight, handling two days, transportation one day up to 62 miles, and one day for every additional 200 kilometers or fraction thereof. Refrigerator cars, which play such an important part with our railroads, are entirely unknown over there, and it is up to the shipper to pack sufficient ice in the box or basket, as for instance when forwarding fresh fish, to carry the shipment to destination.

As to accounting matters, one could hardly draw a comparison, as the complications which arise in this country on account of private ownership and the numerous individual roads are almost beyond their comprehension. To begin with, a bill of lading is unknown. The waybill is made by the shipper and completed by the agent, and a receipt for the freight is given only upon special request. The waybill is then entered into the freight forwarded register, and, without being copied in an impression book, is turned over to the conductor to travel with the freight. Card waybills for carload freight are also unknown. At the end of the month a recapitulation is made and sent, together with the freight-forwarded register, to the main office, to be checked, and the latter to be returned after about two weeks. During this period the agent is without any record whatsoever of his freight forwarded. At the other end the receiving agent makes up a daily statement, entering all freight received as to waybill reference, consignee, weight and charges to collect. He also enters the waybills in the freight-received register, forwarding the latter at the end of the month, together with the balance sheet, to the main office, where it is retained for good.

Inasmuch as freight charges are based on mileage, settlement with foreign roads is very simple, especially as terminal switching, damage and similar allowances to be deducted before pro rating are apparently unknown. Final adjustments are supposed to be made within three months, and a year is the outside limit. This also does away with the large number of over and undercharge claims which are such a great burden to our accounting departments. Scale weights are being applied invariably, and no allowances are made on articles subject to shrinkage, such as potatoes. Revision of billing is done by simply picking an item here and there from the reports.—The Railway and Engineering Review.

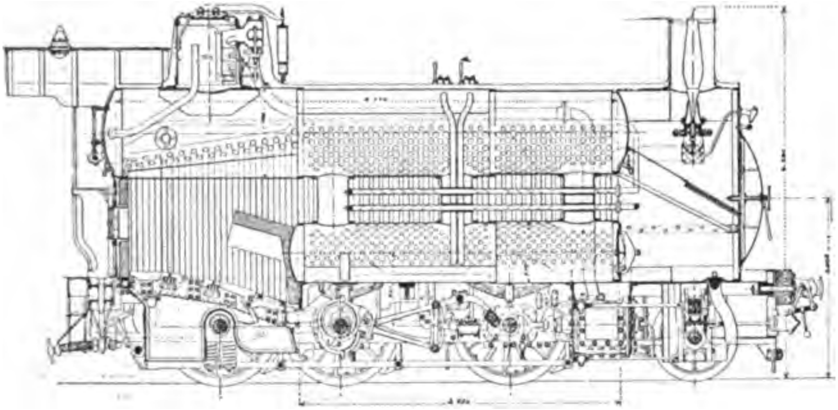
A Water-Tube Locomotive Boiler.

The illustrations here shown are of a water-tube locomotive boiler which has been in successful use on the Algerian lines of the Paris, Lyons and Mediterranean Railway, and was built after the designs of Mr. J. Robert, the chief engineer.

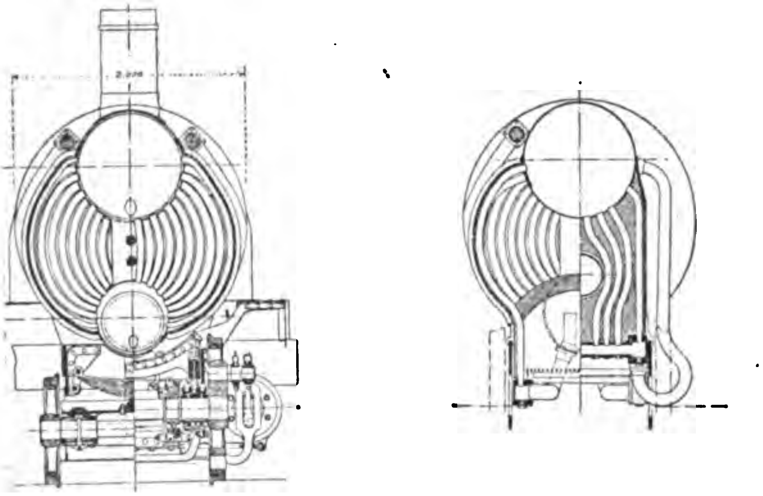
Within the boiler are two horizontal drums, the larger being above and the smaller below, which are connected by three upright tubes or pipes, as well as by the circulating tubes. The lower drum is filled with water, and the upper drum contains both water and steam.

The side walls of the firebox are formed by a series of tubes which connect the upper drum with headers below the grate level, these headers also being connected with the lower drum by circulating pipes. The gases from the firebox pass between the nests of water tubes on their way to the smokebox.

This boiler is said to have special advantages over the ordinary boiler in the ease with which it may be cleaned, no flat surfaces to be stayed by bolts or braces, less weight for the same amount of heating surface, and less time required for making repairs.



Water-Tube Locomotive Boiler, Paris, Lyons and Mediterranean Railway—Longitudinal Section



Water-Tube Locomotive Boiler, Paris, Lyons and Mediterranean Railway—Cross Sections

The Utilization of Peat.

There is no doubt that, apart from political considerations, the chief reason for the striking difference between the prosperity of the population of Great Britain and Ireland is due to the comparative absence of manufactures in the latter country. The reasons for this industrial backwardness are not far to seek. Although enjoying equal geographical advantages and a mild and equable climate, the island lacks the abundant coal supply with which this country is endowed. At one time practically the whole of Ireland must have been covered with coal-bearing strata, overlaying the rocks of carboniferous limestone, which constitute the chief geological formation; but in place of the coal-measures, we now find deposits of boulder-clay, sand, and gravel, bearing witness to the action of ice and water, by whose agency the land has been robbed of such a valuable inheritance. Remains of the former coal-measures are still to be found in various parts of the country, particularly in the north-east and south-west corners; but the total output is only about 125,000 tons yearly, as against the 225,000,000 tons raised in Great Britain.

The absence of coal is more to be regretted in view of the fact that the country is particularly rich in deposits of iron ore, which lie idle on account of the lack of suitable fuel for smelting. Formerly the ore was reduced on a considerable scale by the use of charcoal obtained from the forests with which the country was at that time covered; but this source of fuel is no longer available, and for over a century the manufacture of iron has been practically extinct. Nothing, again, but the fuel difficulty appears to stand in the way of the cotton industry thriving in Ireland, as it does in Lancashire. The humidity of the climate of Lancashire, which is usually credited as being the most potent factor of the success of its cotton trade, is at least equaled on the other side of the channel, and the raw material could be delivered there, if anything, more cheaply than on this side.

A possible source of fuel for these and other purposes is to be found in the vast peat bogs which cover a great proportion of the interior of the country. These bogs vary from 20 feet to 30 feet and more in thickness over a total area of about 2,500 square miles, while comparatively thin deposits, found in the more mountainous districts, cover an additional area of about 1,900 square miles. It will be seen that if peat could be rendered available for fuel on a commercial scale, a great future awaits the industry; and if the prophesied exhaustion of our own coal supplies should eventually come to pass, the question of the utilization of peat would immediately become of vital importance to the manufacturers of this country.

In composition, peat partakes much of the nature of wood. When dried, it is found on analysis to contain about 60 per cent. of carbon, 33 per cent. of oxygen, and 6 per cent. of hydrogen. The carbon is thus present in only about two-thirds the quantity found in bituminous coal, while the oxygen is from twice to ten times the amount, the hydrogen in the two cases being about the same. Air-dried peat has, on an average, only one-half the calorific value of coal, while even when kiln-dried the proportion does not exceed two-thirds. It thus compares rather unfavorably with coal so far as heating properties are concerned, and its greater bulk and crumbliness make it less suitable for storage and transport, although these disadvantages are to some extent compensated by the fact that, being found on the surface, deep underground workings, with the heavy working costs thereby involved, are unnecessary. As a fuel it has advantages over coal in the very small amount of sulphur present, and the entire absence of slagging. Its freedom from sulphur renders the iron from peat-fed blast-furnaces equal in quality to the best charcoal iron, and the quantity of oxygen present in the substance makes a smaller air-supply necessary, hence reducing the wasteful passage of nitrogen through the fuel.

The most serious drawback to its use, however, consists in the enormous quantity of water always contained in it in its natural state. When cut from the bog, water is present to the extent of nearly 90 per cent. by weight, and even after standing in stacks in the open air until, as far as can be seen, they are perfectly dry, the sods still retain over 25 per cent. of moisture. Furthermore, in this condition, it is very bulky and friable; and though the cost of digging and stacking it is extremely low, before peat becomes a marketable commodity other treatment, with the object of drying and consolidating it, is necessary.

On the continent of Europe the treatment commonly consists in grinding or mincing the sods immediately they are dug, until the substance is reduced to the condition of a thick mud, which is made into bricks, the latter being piled in stacks and dried in the open air for a month or two. Peat bricks made in this way resemble lignite in appearance and density; but when as dry as they can be got, they still contain over 20 per cent. of moisture. They are sufficiently hard to stand a reasonable amount of handling, and may be stored without deteriorating. Bricks thus prepared are used in large quantities all over the continent as a substitute for coal where the latter is dear, the fuel being found suitable for both locomotive and stationary boilers, chemical works, breweries, etc., as well as for domestic heating.

A further improvement in the preparation of peat consists in compressing it hydraulically into hard compact briquettes. At first sight this would appear to solve the problems of extracting moisture and reducing bulk and brittleness at the same time, but a succession of failures have demonstrated the impracticability of expelling the surplus water, even after air-drying, by this means. Peat containing 77.7 per cent. of water leaves the press with nearly 63.5 per cent. still present after having been submitted to a pressure of 2 tons per square inch. Most exhaustive experiments have been made, particular in Germany, with the object of making the plan workable; but the results are given in a report by Mr. J. G. Thaulow to the Norwegian Government in June, 1902, as having been a complete failure. The report states that it proved difficult to reduce the water even to 66 per cent. by pressure alone, and the process required so much capital expenditure and such high running costs to obtain such indifferent results, that the expense was out of all proportion to the output. Another method of extracting water is by the use of centrifugal machines, but this, again, fails to produce the required degree of dryness. It would appear that the only solution of the problem lies in supplementing the tedious air-drying by using artificial heat to drive off the residual water. Dryers designed for this purpose consist of an iron cylinder from 3 feet to 5 feet in diameter by about 30 feet long, revolving on gudgeons at each end. Beneath this cylinder is a furnace, the hot gases from which pass down the entire length of the casing, and return through the interior in contact with the peat. The draught is maintained by a fan at the outlet, which also removes the evaporated water. The peat before entering the drum is disintegrated by a machine, and as the drum is inclined to a slight angle, the contents slowly travel to the lower end, under the influence of gravity. The Simpson dryer, in use on some of the Canadian peat bogs, is rather more elaborate. From a description contained in an article by Mr. W. E. H. Carter, published in a report of the Bureau of Mines, Ontario, it is seen that this form of dryer contains two revolving-drums, 30 feet long, situated one above the other, and both inclined slightly to the horizontal. Both drums are fitted with baffle-plates for stirring up the peat. The latter is fed into the lower cylinder, thence into a pan-conveyor, which carries it back between the cylinders, and discharges it into the upper one. After its passage through this, it is delivered into a shoot leading to a breaker. The hot gases from the furnace beneath never come in contact directly with the peat, and hence the greater proportion of the volatile constituents are retained. The cylinders are driven by chain gear, the upper one making three revolutions per minute and the lower one nine, a charge of peat occupying twenty minutes in the entire passage. As regards efficiency, it is claimed that the Simpson drier will reduce the amount of water in peat from 50 to 10 or 15 per cent., consuming not more than 200 pounds of air-dried peat as fuel per ton produced.

An electrical process of drying peat has been proposed, and we understand that a plant is now being erected in Ireland for the purpose of carrying out the idea on a commercial scale. After a certain amount of water has been extracted by a centrifugal machine, electrodes are inserted in the peat mass and current from a dynamo passed through for some time. The current heats the mass on account of its resistance, and is further claimed to rupture the cellular fibrous matter, and thus assist the final consolidation. It will be very surprising if such a process can compete successfully with heating by the direct action of fuel; for whereas one unit of electricity can not possibly develop more than 3,410 heat units, and at present requires about 3 pounds of coal to produce, the direct combustion of the same coal would develop about thirteen times the amount given back on degrading the electricity into heat.

The peat, after being dried and disintegrated, has next to be formed into small dense briquettes. The most convenient shape for these is cylindrical, having a diameter of 2 inches to 2½ inches and of equal depth. The presses used for this purpose are of two kinds: one in which the descending ram drives a certain quantity of peat into a die with a closed bottom, and the other in which the die is in the form of an open-ended tube about 12 inches long. The latter type, known as the Dickson press, from the name of its inventor, depends for its action on the friction caused by the pressure of the briquettes on the walls of the tube. It is found that a pressure of 8 tons per square inch is required to force the column of finished briquettes along the tube against the frictional resistance only, and this is sufficient to make a dense and well-finished briquette.

Considerable power is expended in the operation, and the tube becomes heated by the friction; but this is an advantage within limits, as the heat causes the surface of the briquettes to become tarry, which adds greatly to their damp-resisting properties and cohesion. The tubes are often water-jacketed, to prevent too great a rise of temperature, as the punches work continuously at the rate of 50 to 60 strokes per minute.

Much of the mechanical treatment of the peat, such as triturating and briquetting, may be avoided by gasifying the air-dried sods in a producer and using the resultant gas for heating, steam-raising, or driving explosion engines. Peat-gas is particularly suited for firing iron and steel furnaces on account of the very small amounts of sulphur and phosphorus present, and its use for this purpose in Sweden is one of the chief causes of the extreme purity of Swedish iron. Less steam is required in the producer than when anthracite or other dry fuel is used, because of the water already contained in the peat, and the resulting gas has a calorific value of about 150 British thermal units to the cubic foot, or much the same as ordinary Dowson gas. The Merrifield plant used in Canada for the production of peat-gas consists of a pair of similar generators, one making "water-gas" and the other "producer-gas," these gases being mixed at the outlet to form the final product. The plant when worked with briquetted peat is claimed to yield 100,000 cubic feet of gas per ton at a cost of 1¼ pence per 1,000 cubic feet, reckoning fuel at 6 shillings per ton and labor at 10 pence per hour.

For the utilization of peat on a commercial scale some more efficient way of harvesting it than the usual method of digging it by hand from the bog is essential. The means adopted will depend to a great extent on the comparative dryness and solidity of the bog. In some cases much of the water can be drained away previously to attempting to remove the peat; but if that is impossible owing to the formation of the land, a dredger, similar to those used for harbor work, is floated on the surface and delivers peat, in the form of mud, to barges in attendance. An aerial ropeway forms a convenient system of transport from the barges to *terra firma*. In the cases of fairly dry bogs the surface is cleared of growing moss, stumps of trees, etc., which will serve as fuel for the drying plant. In some of the Canadian bogs portable tramways are laid on the top of the bog to convey the peat to the works. The surface of the bog is then harrowed, and when the loosened peat has become fairly dry by the action of wind and sun, it is raked together, loaded into trucks, and hauled to the briquetting works. At other bogs mechanical dredgers running on broad wheels are employed. An endless chain, fitted with alternate knives and scraping-plates, works along the face of a trench about 4 feet deep. The peat sliced off is raised to the top of the machine and deposited onto a conveyor, which delivers it into a casing containing a rapidly-revolving paddle-wheel. The blades of the latter drive the peat out in a continuous shower, which falls on the ground 10 or 15 yards away. The layer thus formed is about ½-inch thick, and soon becomes fairly dry, when it is raked up and taken to the works.—Engineering, London, England.

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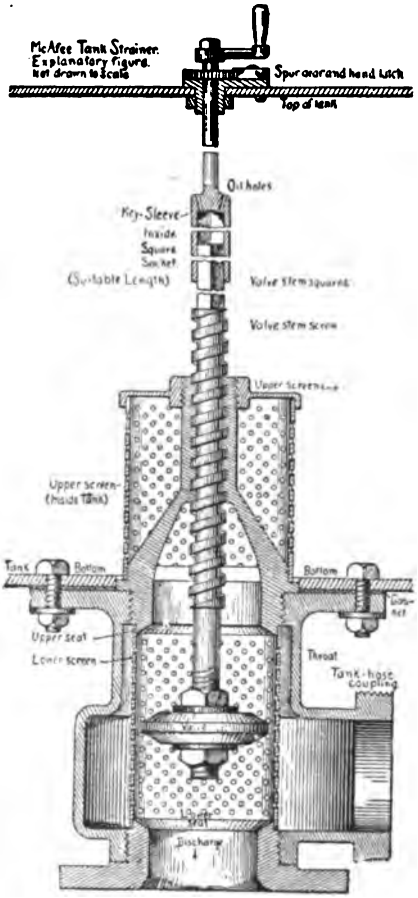
The McAfee Tank Water Strainer and Valve Combined.

The illustration herewith is of a locomotive tank water strainer and valve combined, which has been invented and patented by Mr. Joseph McAfee, 1432 Peach street, West Philadelphia, Pa., and is intended to obviate the many difficulties now experienced with the present form of tank water strainers. Mr. McAfee says of his invention:

"Undeniably the prompt and reliable feeding with water of the boiler of a locomotive engine is one of the prime conditions for the reliability of the railway service in general. Reliable train service can not be had without the assurance of a reliable feed water supply to the boiler of the locomotive under all conditions and at all times, as this is the foundation for the prompt and ample generating of the necessary motive power. Still it is a fact that designers of locomotive engines, as a rule, do not pay that attention to the injector which its importance calls for, and beyond specifying the type and size desired, hardly any other attention is paid to its most desirable location and other points, with a view to assisting in the development of the best qualities and assuring reliable service.

"Injectors, as any other product of human endeavor, are subject to defect and failure; the very mechanical nature of the instrument calls for consideration in its arrangement and that of its accessories which, when properly considered at the time of building the engine, would go a long way toward preventing annoyance, expense, and sometimes serious inconvenience. It is perhaps within the province of this paper to point out some features in this direction. The little conical copper strainers inside of the feed pipes should be abolished, as they are a nuisance and the cause of more trouble than they get credit for. If a premium had been put upon designing something to readily catch and retain any dirt in such manner as to materially reduce the water supply, these strainers would undoubtedly have received the first prize. The very fact that they are inside of the pipe is objectionable. The strainer should be outside the pipe. The size of the strainer should be such that, even if half filled with foreign matter, it would retain the full pipe capacity. It should also be so designed that it could be readily cleaned at any time and in a very few seconds. Such strainers can be obtained in the market, and their cost would be more than compensated for by avoiding troubles often caused by their absence. The free and unrestricted passage of the water from the tank to the injector on a locomotive is of the utmost importance. It is the experience of the engineer and those who have to deal with the question that ordinary strainers are liable to become stopped up and obstructed with the accumulations of dirt and other matter which gets into the tank and prevents the proper flow of water to the injector, thereby causing a great deal of trouble and loss of time.

"To obviate this difficulty the McAfee improved strainer and valve has been designed, which, while retaining the full pipe sizes in the perforated strainer, is spacious enough to allow for the accumulation of the obstructing substances before described, during the ordinary run of the locomotive, and still allow a free passage for the water from the tank to the injector. By the use of this improved strainer the reducing of the capacity of the injector from a short water supply will be altogether avoided, and the injector will be permitted by the continuous flow of the water in full volume from the tank to throw its full capacity and reduce the chances of its breaking to an infinitesimal degree. The very large outlet at the bottom will enable the engineer to clean the strainer in the shortest time possible. All that is necessary for this purpose is to give the handle one full turn, as this will raise the valve one inch from its lower seat, and the water will



The McAfee Tank Water Strainer and Valve Combined

rush through the discharge and clean the strainer at once.

"Removing fine particles of coal and cinders, which wear injector tubes and check valve seats, insures *full capacity of the injector*. Owing to the large area of the strainer it can be cleaned or repaired easily and quickly without breaking the pipe connections. Further advantages are less wear of the combining and delivery tubes, material saving in time, and convenient and mechanical arrangements of all the parts.

"The stated difficulties are now of common, every-day — and night — occurrence in the running of locomotives on all roads.

"By the use of this invention there is:

"No more trouble with the water supply from the tank to the injectors of the locomotives; no more detentions at the roundhouses or on the road on account of injectors failing to work; no more time lost cleaning out tank screens, thawing out tank hose and feed pipes, and renewing burned-out tank hose; no more fires to be drawn on account of the injectors failing to work, while running over the road, the trouble being due to dirty tank screens causing coal cinders, or something large enough to prevent the working of the injector by getting into the combining or delivery tubes, or under the inlet valve, or the water may be hot, due to the leaky steam valve in the injector from the same cause.

"With this tank water strainer nothing large enough can get to the injector to prevent it from working. If feed water is hot, raise valve to its upper seat and blow out the hot water, at the same time the screen will be cleaned. Then close valve to its lower seat, which will give a cool, full supply of water. All this can be done in a few seconds, no matter how fast the locomotive is running. No more freezing up of tank hose or feed pipes when locomotives are stored at the roundhouses, or while running over the road. Simply raise the valve to its upper seat and blow the water out of the feed pipe—there is nothing to freeze; no more tank hose to be burned up with steam to keep them thawed out; no more tank hose to be burned up to thaw them out after they freeze; no more trouble with dirty tank screens—raise valve off lower seat, and water will run around valve, washing it clean at once.

"This new tank water strainer will preserve the tubes in the injector by preventing any gritty matter from passing to the injector which will cut the tubes and prevent it from working well and fully. No more locomotive boilers to blow up on the road on account of poor water supply, caused by the injector failing to work when something has come from the tank large enough to prevent it from working, which has often caused serious results.

"This tank water strainer will soon pay for itself in the saving of tank hose. Tank screen castings now in use can be easily, quickly and cheaply modified to adapt them to my invention."

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*Electric Railway Equipment.**

The direct-current railway motor has been greatly improved and has undergone more changes in detail than is perhaps generally appreciated. The old troubles of sparking and flashing at the commutator have been practically eliminated. Previously it was considered advantageous to short-circuit a turn on the field winding, to reduce the sparking at the brushes and in the controller, the idea being to restrain the rapidity with which the magnetism of the motor changed, but several years ago it was found that while this provision decreased whatever troubles occurred due to opening the circuit, that it was a positive cause of flashing in case the current was interrupted and suddenly applied. For example, this trouble would occur on passing a section insulator with the controller on, and more especially when operating with sleet on the trolley wire or running over a third rail with an uneven surface.

The field coils as now made not only have no short-circuiting turns, but where metal spools are used it is customary to split the spool and introduce an insulation into the shell to eliminate every feature of a short-circuited turn.

The armature revolutions of a motor as affecting the peripheral speed of the commutator have also an effect on the sparking and wear of the commutator. The armature revolutions further affect the performance of the bearings, and while it would be possible to build a lighter and cheaper motor at higher armature speeds, a maximum of 1,500 revolutions per minute appears to be the highest desirable limit as indicated by experience.

The performance of a motor for any

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*Abstract of paper by W. B. Potter, General Electric Company, read at the meeting of the American Street Railway Association, Philadelphia, September, 1905.

service may be limited by its commutation, or, as is more commonly the case, by its heating. The heating of a motor is affected by the losses in both the copper and iron, but the relative heating effect of these two elements is quite different. The copper losses predominate during acceleration and the iron losses when running at the higher speeds; the effect of the iron losses is therefore to limit the capacity of the motor for continuous running. Although the service in which motors are now commonly used does not call for a continuous run of many hours at full speed, without occasional acceleration, the iron losses are, nevertheless, of importance, and more care than formerly is now exercised in the selection of the iron for the armature. The principal cause of these iron losses are the eddy currents in the iron, and to eliminate these a special study has been made of annealing and japanning the laminations.

While the temperature of a motor under given conditions is proportional to its internal losses the actual temperature rise may be greatly influenced by ventilation to assist in dissipating the accumulated heat. Forced ventilation by means of a blower, similar to those used with air-blast transformers, may be employed. By this means the temperature of the motors in any particular service may be very much reduced, but the complication is such that it does not seem well adapted to the ordinary electric car. Forced ventilation is, however, well suited to locomotive work where the blower may be carried in the cab. As the motor commonly used depends upon its own rotation for ventilation, the arrangement of the ventilating passages must be carefully studied, not only to secure the best cooling effect, but also to prevent depositing brakeshoe and carbon dust or other injurious material upon conducting surfaces of the motor which can not be conveniently cleaned.

The mechanical injury to motor armatures usually results either from the armature striking the pole pieces or the mechanical weakness of the armature binding. The former, where resulting from the wear of the armature bearing linings or loose cap bolts, can be avoided by a proper system of inspection, but the latter is a question of motor design.

The strains to which the armature bindings are subjected, particularly if the car is speeded above the normal, by driving it with power down grade, are not ordinarily appreciated. As an illustration, the weight of the armature coils in a 125-horse-power motor is less than 200 pounds, and yet the radial centrifugal strain of all the coils at 1,500 revolutions per minute is about 48 tons, giving a resultant strain of over 15 tons on the binding wires, and even if these wires are strong enough to hold the coils without breaking, they may stretch enough to permit a considerable movement of the coils in the armature slot, resulting in an abrasion of the insulation. An armature should be so bound that there will be no evidence of weakness at 50 per cent. above the maximum normal speed, and the ultimate strength of the binding or bursting speed of the armature should be at least double the maximum normal speed, to insure the proper margin of safety.

The field coils of a motor, although subject to less potential than the armature, by reason of their location in the motor, are more subject to injury from occasional water. A distinct improvement has been made in the construction of the field coils by immersing them in a bath of hot compound under vacuum. The effect of this process is to thoroughly fill all air spaces with compound, which not only renders the coil more waterproof, but also makes it more solid and less liable to injury from mechanical vibration.

With the increased capacity of the motors the strains on the gearing have very much increased, particularly on the pinion teeth, which are of weaker section than the gear teeth. To meet these more severe conditions a very high grade of steel is required, both with respect to ultimate strength and elastic limit. The grades of steel commonly used five or six years ago would by no means answer for the pinions of the larger motors built today. Not only are the strains severe, but owing to the overhang of the pinion, the face of both the gear and pinion teeth when new and doing heavy work are not in contact across their full width. The strain is borne principally by the end of the teeth nearest the motor, with the result that a shearing action takes place, which will sometimes break out a part if not the whole of a pinion tooth. As a pinion wears the teeth become thinner on the side toward the motor, so that a pinion which has been in service until its teeth match with the gear across the full face may prove stronger under stress than a new pinion.

The solid axle gear is to be preferred to the split gear, and, were it not for the inconvenience of removing the car wheel, would doubtless be more generally used. The objection to removing the car wheel for the reason that its fit on the axle is impaired may be overcome by the use of a wheel with an extended hub, on which the gear is shrunk, as proposed by Messrs. Doyle and Brinkerhoff, and in use on the Interboro, New York.

The more severe demands of present service have also necessitated changes in the older type of controllers, as well as the development of new types of control and control appliances. The cylinder controllers have been improved by making the arc deflectors of a more vitreous material, less affected by the arc and productive of a much smaller quantity of conducting gas when opening the circuit under abnormal conditions.

For the control of equipments aggregating 200 horse-power and over the Type M control, consisting of electrically operated contractors or switches, is recommended, and is being very generally used. It is not only possible to handle heavier currents and a higher voltage by contractor switches, but a further advantage lies in the fact that the master controller occupies considerably less space than a cylinder controller handling the full motor current.

Whether the cars are operated singly, or in trains, as the Sprague-General Electric multiple unit system, the control may be either hand operated or automatic in its action; in the former case the handling of the master controller is similar to the ordinary cylinder control, and there are controller notches corresponding to each rheostatic step and the series and parallel running points. In the automatic control there are only three positions of the handle, the first one giving slow movements to the car for switching, the other two points being the series and parallel running positions. The intermediate rheostatic points are actuated automatically by a series relay on each car of the train. The automatic form of control is well adapted for services where the rate of acceleration may be predetermined and need not be dependent upon the judgment of the motorman.

It is a matter of favorable comment that the car wiring is now receiving much more attention than formerly. Those familiar with the character of work formerly done will readily testify to the advantages secured by eliminating the dangerous practice of attaching the wires by staples or other means to any convenient place on the under side of the car, and often without regard to the movement of the brake levers and compression of the springs of the loaded car. The best recognized practice is now to install all wiring in iron conduit, and if properly done, with the ends of the pipes fitted with bell mouths or other provision to avoid abrasion of the wire, the car wiring should prove the most safe and permanent part of the electrical installation.

The suggested improvements in wiring apply with even greater force to the lighting and heating circuits, as these circuits have generally been given less attention than the motor circuits. As a source of fire, the lighting and heating wires are dangerous on account of their location in the roof or sides of the car, their inaccessibility for inspection, and the fact that current is often left on these circuits when the cars are in the car barn.

While many of the preceding remarks have been based more particularly on the experience with direct current apparatus, the essential principles apply equally to the alternating railway equipment.

During the past year there have been several installations of alternating railway equipments and the outlook is very promising for this class of equipment under conditions advantageous to its use. Considered wholly from a technical standpoint there is no question but that alternating current motors can perform any service now done by direct current apparatus, but the choice, as between alternating and direct current, should not be made without a full consideration of the direct and indirect expense incident to either type of equipment.

As the street railways and the steam railroads are now becoming so closely identified, a reference to some of the recent tests of the New York Central electric locomotive will not be out of place. This locomotive has now run over 21,000 miles with trains of varying weights. The maximum speed attained with a train weighing 278 tons, including the locomotive, was 71 miles per hour in a distance of about 4 miles. With the locomotive alone the maximum speed was 85 miles per hour, with the probability that the speed would have been 100 miles per hour had the run been twice the length.

The total weight of this locomotive is 97 tons, of which about 70 tons is on the drivers. The nominal rated power is 2,200 horse-power, although the output during acceleration has often exceeded 3,000 horse-power.

In conclusion, I would call attention to the benefits that may be derived, both from an operating and manufacturing standpoint, from a record system covering the mileage of parts and detail cost of maintenance of the car equipment. The records of the power and substations, which are more easily kept, seem to be fairly complete, but of the car equipment the records do not seem to be generally available in such form as to permit a comparison of the relative merits of any particular method of operation or quality of material. If a uniform system could be standardized and the records submitted at each association meeting, they would be a valuable source of information and a further incentive to improvements in the design of apparatus and the methods of operation.

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*Train-Pipe Leakage in Freight Service; Effects, Causes for, and How to Reduce.**

To the President and Members of the Air Brake Association:

Since the introduction of heavy motive power, which necessarily increased the number of cars hauled in each train, one of the most troublesome evils, regarding the safe handling of these trains, has made itself manifest, not only to the air brake men, but to engineers handling these trains, namely—train-pipe leakage. The transportation department speaks of tonnage trains; the air-brake men of the number of cars per train, as each car added means an increase of train-pipe leakage.

It is the aim of all railroad officials to prevent blockades in the terminal yards, which necessarily cuts down the amount of time for a thorough inspection and remedy of this evil. But the bad effects of sending trains out of yards with excessive train-pipe leakage results not only in detentions to that train in particular, but to several other trains in first-class service from causes which we will enumerate later.

Railroad companies to-day make a great mistake when they allow outside firms to inspect new cars being built by car companies, as these men are not aware of the importance of tight train pipes, proper clamping, etc., and if they are, they do not demand the rigid enforcement of a tight train pipe that the railroad inspector would. Your chairman has had occasion to reject cars passed upon by these men as being O. K. when they were not in fit condition to accept for road service.

In many instances enginemen are reprimanded for the rough handling of trains (for which they are not responsible) and are taken out of service for ten or fifteen days' time, when the whole trouble can be traced to train-pipe leakage. This is especially true when handling mixed trains of loads and empties with an unequal distribution of braking power, when, after an application of the brake has been made, excessive leakage, added to the amount of reduction made, causes the train to part.

Air-brake men should put forth their efforts to relieve this situation, as they would not wish to handle a train of 50, 75 or 100 cars when it would be impossible to apply brakes without doing damage to equipment. A number of instances have come to our notice where enginemen would shut off steam at least one mile from a passing siding which they were to enter, to allow the train to slow down and thus avoid using the brake, in order to prevent stuck brakes or break-in-twos. As brakes were applied to cars to be used for stopping purposes, they should be maintained in proper condition to be used at all times, regardless of the number of cars in train.

Train-pipe leakage is increased on long trains, due to heavier strain on drawbars and knuckles, increasing the number of break-in-twos, and we can safely say that if a train line on a 50 or 75-car train is tight before train has parted, no one can vouch for the amount of leakage after emergency takes place, due to dirt on emergency valves.

The question of controlling heavy trains on mountain grades, by the use of the air brakes in place of hand brakes, makes it of more importance to keep tight train pipes than heretofore, and a 50-car train on a 1¾ per cent. grade can not be successfully handled with more than four pounds' leakage per minute.

Another serious mistake is: (1) The use of light butt weld pipe in place of extra heavy lap weld. (2) The use of adjustable dies in place of solid dies, there being a full thread on only ¾ of the circumferential ends of the pipe. (3) Defective malleable iron fittings, being of insufficient thickness, so that they spread and are only made tight fitting by running on to the body of pipe. (4) Inferior quality of air hose, becoming porous in from 4 to 6 months' service.

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*Paper by P. J. Lanyon, Chairman, and W. C. Hunter, presented at the Twelfth Annual Convention of the Air-Brake Association, April 11, 1905.

A considerable proportion of train line leaks occur between the cars, either between the faces of the couplings or through the hose itself. The leaks through spongy hose are the hardest to detect, and can only be successfully detected by the use of soapsuds. Where soapsuds is used and the defective hose thus detected are immediately removed, it has been found that it reduces the troubles arising from train-pipe leakage to a surprising degree. But the detection of spongy hose by soapsuds is not possible during the frosty weather, and hose of this description are the direct cause of increased leakage at the hose coupling in very severe weather, because of the fact that the pores through the outer covering of the hose will admit moisture during mild weather. When the next ensuing drop in temperature to freezing weather takes place, the hose becomes rigid and fails to accommodate itself to the varying distance between the cars. The result is that the coupling will open more or less by revolving upward. They have from this cause sometimes been known to part entirely, and the leaks thus set up have frequently resulted in stalled trains, besides the extra work for the pump, with its inevitable result in pump failure.

A complete remedy for train-pipe leakage from this cause is very hard to obtain, but there is some remedy in the use of a quality of hose that will not easily become porous, in insisting upon the hose receiving proper treatment when being uncoupled; and in all railways making use of the soapsuds test as late in the fall of the year as possible.

Leakage between the face of the couplings has several very common and well-known causes, that of distorted couplings being probably the most common. The remedy for this is the use of a proper template by inspectors and hose repairers, and in the suppression of bad practices, such as hammering the couplings and uncoupling by pulling apart.

Worn or improperly applied coupling packing rings (or gaskets) is the next most important cause of leakage at the hose couplings. The remedy for this is obvious. It is simply constant inspection and faithful repair work. In very severe winter weather hose coupling gaskets are sometimes damaged by the coupling adhering to the gasket, and, when forced apart, tearing away a portion of the rubber.

But there is another point that does not seem to have received much attention, and that is that almost all causes for train-pipe leakage between cars are aggravated by the great variation in the distance between cars when the slack is bunched or stretched.

The air-brake hose has a standard length of 22 inches, and the length of the train pipe is determined by the fact that the center of the angle cock must be 13 inches back from the inside face of the drawbar knuckle, and the train pipe is clamped to the end sill of the car. Thus the length of the train-pipe connection between any two cars must remain constant, no matter what the variations in the distance between the cars are, and which variation is caused by the difference in the strength of draft gear springs and worn knuckles of other drawbar attachments.

To ascertain what the average variation in the distance between the cars on freight trains is, several tests were made, and the general result in each was practically the same. A blue print was made of the result obtained by measuring one train of 38 cars. This test was made in the Moncton, N. B., yard of the Intercolonial Railway of Canada.

The train was standing on level track and the hand brakes were set on three cars on one end of the train. The slack was pushed in from the other by a switch engine and held there until the distance between the cars was carefully measured. The slack was then pulled out and the same measurements taken. It will be observed by referring to the accompanying illustration that the amount of slack due to the knuckles and the amount of slack due to the drawbar end play is shown separately. This was an average train of cars owned by several railways, made up by dispatching from a junction yard cars taken from several trains, so the test would be as practicable as possible.

The figures accompanying the blue print are as follows:

Total number of cars in train, 38.

Total slack found in train, 17 feet 7⅝ inches.

Average slack between the cars, 5.87 inches.

Total slack at knuckles, 4 feet 5.25 inches.

Average slack at knuckles, 1.48 inches.

Total slack caused by drawbar end play, 13 feet 2.375 inches.

Average slack in drawbar end play, 4.4 inches.

The accompanying illustration also shows another feature brought out by these tests; that is, the variation in distance from the rail to the train pipe, and in the length of the train pipe. The amount of slack between the cars is most certainly a factor in the cause for train-pipe leaks, particularly in cold weather. This is contributory to trains parting on the release of brakes on long trains on account of the slow release on the rear cars, causing an undue strain on the forward portion of train, the release being made slower on account of the leakage at the hose couplings.

To further demonstrate the evil effects of train-pipe leakage several tests were made in the Gouldsboro yard of the D., L. & W. Railroad with the use of recording charts and gauges. The following results were obtained:

Engine with 9½-inch Westinghouse air pump; main reservoir capacity 21,000 cubic inches; speed of pump, 140 single strokes per minute; pump in service eight months; capacity of pump-charged 21,000 cubic inches from 0 to 100 pounds pressure at speed of 140 strokes in one minute and 54 seconds.

KEY.

A. Distance between cars with slack bunched.

B. Distance between cars with slack stretched.

C. Distance between faces of coupler head with slack bunched.

D. Distance between faces of coupler head with slack stretched.

E. Distance between a point on coupler head and buffer block with slack bunched.

F. Distance between a point on coupler head and buffer block with slack stretched.

G. Distance from rail to center of train pipe.

H. Distance from inside face of coupler to center of angle cock.

I. Distance from center line of car to center of angle cock.

Cut in to train of 55 cars at 1:20 o'clock, train pipe and auxiliary being dry:

Train-pipe pressure on engine at 1:25, 40 pounds. On 55th car, 39 pounds.

Train-pipe pressure on engine at 1:29, 55 pounds. On 55th car, 53½ pounds.

Train-pipe pressure on engine at 1:31, 60 pounds. On 55th car, 58¼ pounds.

Train-pipe pressure on engine at 1:33, 65 pounds. On 55th car, 64 pounds.

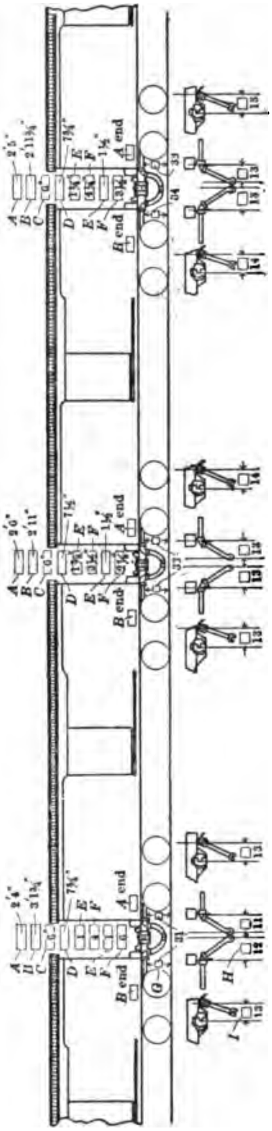

Illustration Showing Dimensions between Cars when Train was Bunched and Stretched

Train-pipe pressure on engine at 1:36, 70 pounds. On 55th car, 68½ pounds.

Total time to charge from 0 to 70 pounds, 16 minutes.

A 10-pound reduction was made in train-pipe pressure, and the amount of leakage taken per minute by a gauge on the first car and the recording chart on the 55th car. This was found to be 4½ pounds per minute, the pressure dropping from 60 to 50 pounds in a little over two minutes. A release of brakes was made when the train pipe registered 50 pounds, and the time taken to recharge to 70 pounds was 8½ minutes.

The train-pipe leakage was increased to 9 pounds per minute, and it required 12 minutes to recharge from 40 pounds to 65 pounds pressure, and 6 minutes to charge from 65 to 70 pounds. The pressure on first car registered 70 pounds and on the 55th car 67½ pounds.

As the table shows that it required, with 4½ pounds leakage, 5 minutes to charge from 60 to 70 pounds, and it has been fully demonstrated from experience that only 2 to 2½ minutes elapse between the release and application of brakes on 1¾ to 2 per cent. grades, it proves beyond a doubt that if the grade is long it is not practical to successfully handle these trains with this amount of leakage.

Leakage, which is common on all classes of cars in freight service, can be traced chiefly to air hose, hose coupling gaskets, 1¼ and 1 inch union gaskets in train pipes, and angle-cock keys.

A record for 12 months of the number of brakes cut out and carded on account of leaky release valves, not being able to apply same unless auxiliary and cylinder were loosened from sills (which can not be done in yard terminals without serious detentions), 265. In the same period 363 triples were removed on account of leaking at exhaust port when brake was released. Angle cocks removed on account of leaky body key, 332. All of these defects are chargeable to train-pipe leaks, and we might add that this number is comparatively small, if a more rigid inspection was made, as in each case the inspector's attention was attracted by an unusual blow.

Twenty trains, each consisting of 40 cars, showed an average leakage of 4½ pounds per minute. Twenty trains, each consisting of 55 cars, showed an average leakage of 4 pounds per minute. While this is not considered excessive, we know that where time and attention are given to this work these figures can be cut in two.

On a 75-car train, with two inspectors, train charged from yard testing plant, after 65 minutes' inspection and repairing the leakage was but 2½ pounds per minute. Another train of 75 cars on which the inspectors were given 40 minutes, showed a leakage of 6 pounds per minute.

Leakage in all of these tests was taken by charging the train pipe and auxiliaries to 80 pounds pressure and making a 10-pound reduction so that pressure did not flow back from the auxiliary to train pipe through the triple feed grooves.

By placing the handle of the brake valve on lap position and taking train-pipe leakage is not a proper method, and does not give true conditions existing in train pipe. The train pipe alone on a 75-car train contains a volume of 40,000 cubic inches, while the auxiliaries on the same number of cars contain a total of 112,500 cubic inches, so that a leakage of 9 pounds from train pipe alone would only show about 2½ pounds if taken by the latter method.

From the above tests we can draw our conclusions and safely say that diligent inspection and repairing is absolutely necessary, and that time is an essential factor in reducing this common evil.

Where there are no yard testing plants, and the charging of trains is done from the road engines, considerable time is lost waiting for engines that could be devoted to taking up leakage, and trains are not properly inspected when engines are coupled. The moment that the coupling is made to the train and before the train pipe is charged above 30 pounds pressure, the inspector starts his inspection for leakage. This he must do for the reason that one bad leak in the train pipe will prevent charging the train, and too much time would be lost in waiting to charge the train to maximum pressure before starting inspection. This leak may be at the rear of train, and by the time the inspector has found and repaired the leak, 30 minutes are consumed. The yardmaster is forming this train from the yard, although the engineman protests that he can not get more than 50 or 60 pounds train-pipe pressure, and in his anxiety to get the proper pressure he increases the speed of the air pump to such an extent as to cause pump failure.

When we sum up what the evil effects of a leaky train are and the cost of damage accruing from same, we can not surmise why the mechanical department thinks that one inspector can inspect a 50 or 75-car train and at the same time renew brake shoes; and under these same conditions the transportation department objects to more than 30 or 40 minutes being used, when they forget that the train must be inspected on both sides, as train pipes, brake cylinders and their connections may be on either side of cars, which would require the allotted time to walk the length of train and return without performing any work. Inspection is one part of the work; repairing the defects when found is the other and most important part.

If a proper investigation of detentions in freight service is followed closely, it will lead up and can be charged to train-pipe leakage. Pump failures, ends pulled out, broken knuckles, stuck brakes, trains stalling due to stuck brakes, can be traced in a number of instances to excessive leakage.

We often hear the term used after a break-in-two that it was caused by a "kicker in the train." Naturally, on any given reduction from train-pipe pressure, the train-pipe exhaust at the angle fitting of the brake valve is strong and prolonged according to the length of train; but where there is excessive leakage in train, the air that should vent to the atmosphere at the brake valve has another outlet, and while applying brakes, if leakage is in rear part of train, the train parts, the engineman, not receiving the proper train-pipe exhaust, states "kicker in train."

REMEDIES.

(a) Not less than four ½x2½-inch clamps to secure the train pipe to the body of the car. A number of cars have only two clamps each, fastened to the end sill. This is bad practice, as the lags become loose and allow the train pipe to shift, breaking the 1-inch nipple at the triple valve.

(b) Train pipes to be applied with as few ells as possible.

(c) Heavier and better quality of malleable iron fittings.

(d) Extra heavy pipe with good full thread.

(e) Installation of yard testing plants and a sufficient number of inspectors to operate same, so that leaks can be detected and remedied before the engine couples to the train, thus relieving the air pump of this amount of work.

(f) A liberal supply of air hose and coupling gaskets at all inspection points.

(g) Train pipes applied to cars so that unions and release valves can be easily tightened and renewed. Any number of cars are equipped today where it is impossible to apply release valves without dropping the cylinder from the sills of car, and 1¼-inch unions are placed between center sills where it requires a hammer and chisel to tighten or loosen same.

(h) The elimination of piece work in piping and testing cars in repair shops.

(i) Air hose to be removed when cars are on repair tracks, and work to be done on car that requires the removal of trucks. This is to prevent cutting the inner tube, causing hose to burst.

(j) Having sufficient inspectors to separate hose by hand in terminal yards.

(k) A reasonable length of time in which to make the necessary repairs. The inspection is one point, but repairing the defects when found is the main point.

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*Western Railroad Activities.**

Electric Railway Construction in California.—While electric railway construction has made remarkable progress on the Pacific Coast during the past decade, the immediate future promises more wonderful development along those lines. Especially is this the case in California. The past two years has witnessed the construction, equipment and going into active operation of a number of important lines in various parts of the State. A number of other and far more important lines are now being projected; in fact, these projects have so far advanced as to assure the early construction and equipment of these lines. Besides the Ocean Shore Line, that will connect San Francisco with Santa Cruz, is a road from San Francisco down to San Jose. Another line is to be built to Yosemite Valley, and one over to Lake Tahoe, in the edge of Nevada. Several important electric roads are projected in the counties of Solano, Napa, Sonoma, Marin, Contra Costa, and others—all important extensions to those already in operation in those regions. Work has already been commenced on some of these projected lines. In Southern California several important roads are proposed, and their early building is assured. Altogether, wonderful activity has been recently developed in many parts of California, and the next few years will witness the building of hundreds of miles of electric roads. With this era of remarkable electric railway construction comes the no less important question of motor power—of overhead trolley, or, the third-rail

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*Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

(ground) system. Thus far only one line of the latter type has been built and operated in California. That is the North Shore Railroad, in Marin County. Several fatal accidents have occurred on this line during the past two years, and a strong public sentiment exists against the general adoption of the ground system. Nor is the trolley system without its objectionable features. These public objections have created much discussion recently among the projectors of electric lines, as to which system should be adopted. Just what the ultimate outcome will be is somewhat problematical. Of course, there are well predicated objections to some extent to both systems—for both are a constant menace to limb and life. Electric engineers have wrestled for years with the problem of making the third-rail system harmless to other traffic. In its original, the third rail is exposed on the surface of the ties, like the track, only standing a little higher. The heavy current with which it is charged is conveyed to the motor through a projecting arm, at the outer end of which is a shoe that slides along the surface of the rails. The third rail is, however, a menace to all other road traffic; and to human life, owing to the danger of contact. As before stated, the North Shore Line in Marin County is a third-rail track, and it has had its victims.

One of the improvements made of late years in third-rail operation was to divide the track into blocks, so that the moving car charged automatically only the block it occupied, leaving the rest of the rail "dead." The area of danger was thus contracted, but the risk to life through this improvement has been too great to warrant the adoption of the third-rail system in populous districts, or on thoroughfares used by other traffic. Electric engineers and managers have not, however, given up the idea of using the third rail, because of the ease with which it can be attached to the roadbed, and its cheapness of construction and operation, as it requires no supports other than those provided to carry the regular track. The New York Central has adopted a new kind of third-rail on its electric system from the Grand Central Station to White Plains and other points in Westchester County. On this system the charged rail is covered with a wooden case suspended on the ties on iron brackets. The shoe feeding the motor makes a contact with the underside of the rail. It is claimed the sheathing affords perfect protection to animals, or persons ignorant of the danger of contact with a "live rail," as the latter can not be reached except from below. The presumption is that the New York Central's right of way is used exclusively by its own trains, and that no part of it is a common thoroughfare. It is clear that the sheathed third rail can not be adapted to a thoroughfare used by general traffic, for the reason that it still is an obstruction to ordinary travel. On such thoroughfares, reliance must continue to be placed on overhead, or underground trolley lines for electric traction. Sooner or later, however, popular sentiment will demand the abolition of the overhead trolley, and electric railroad managers in populous cities will be forced to put their trolley wires under ground, even though it will cost them more for construction and maintenance.

The important questions of expediency, practicability and economy—and of public safety, are now claiming the careful consideration of companies and managers of the various projected electric lines in California. The construction of these roads has already been determined upon, and naturally the question of the best and safest system to be adopted is up for discussion.

About Foul Air in Tunnels.—There are several long tunnels on the Pacific Coast railroads. The longest are the Stampede Tunnel, in the Cascade Mountains, on the line of the Northern Pacific, and the long tunnel in the Cascades, on the Great Northern, not far from Seattle. The famous Stampede Tunnel is three miles long, and the one on the Great Northern's line more than two miles in length. There is another tunnel a mile in length running under a part of Seattle where Hill's transcontinental road enters that city. There is also a long tunnel in the Santa Cruz Mountains on the Southern Pacific's line; also the tunnel through a spur of the Sierra Nevadas (the Santa Susanna). Of shorter tunnels, there are many scores on the Pacific Coast. In cutting these tunnels, the question of foul and hot air was a serious one; and it was necessary to constantly force fresh air in to the men boring and blasting. The heat and bad atmosphere were difficulties to be continually encountered during the progress of these great undertakings that required so much time and cost such large sums.

Notwithstanding precautions are always taken by trainmen on passenger trains to tightly close all windows and doors before entering long tunnels, yet all passengers well know the disagreeable features of a sudden plunge under a mountain; of the sense of brain compression, and the half lung stifling that is experienced during the time. Engineers, firemen, brakemen and train crews are the greatest sufferers, as they are not in the least protected while plunging through tunnels.

The question of bad air in long tunnels has for many years been one of discussion among railroad builders and operators. Tunnel builders and guards, railroad employes, etc., spending some length of time repeatedly in railroad tunnels beyond a certain limit, are subject to what is known as "tunnel sickness." They are frequently attacked by vertigo, lose consciousness, and show the first symptoms of asphyxiation. They are troubled with headache, nausea, muscular fatigue, physical inability to do their work, and impairment of the use of the legs. Mentally the memory weakens, the ideas tend to become confused, the mind grows sluggish, with a propensity to errors of judgment and direction, and there is a deadening of the senses, particularly of hearing. Men whose employment keeps them from four to eight hours a day in a railroad tunnel, frequently incur a sort of chronic poisoning, shown by habitual headache, loss of appetite and flesh, weakness, paleness, and an anaemic condition. Often after a few months, or at most a year or two, they have to be replaced. If a locomotive drawing a heavy freight train should "pin-wheel" long enough on an upgrade in a tunnel, without being able to advance, the result might even be fatal to some of the trainmen. These troubles are caused mainly by the vitiation of the air produced by the gas and smoke emitted by the engine; and contributarily by the heat consequent upon the distance below the earth's surface.

The Italian government commission of physiologists have long ago found out and proved by laboratory experiments on self-sacrificing human volunteers that what especially vitiates the air is the small quantity of oxide of carbon contained in the locomotive smoke. This produces partial asphyxiation, robbing the blood of its ability to combine with oxygen, which is also the result of the barometric depression on mountain climbers and balloonists. So that, curiously, it turns out that the trouble affecting these is really the same thing as "tunnel sickness." As a means of prevention, the commission recommended that each train traversing a long tunnel be provided with several steel cylinders filled with compressed air and with compressed oxygen, two on the tender for the engineer and the fireman, and another for the brakeman, these three functionaries running the most risk on trains. By furnishing a current of air, these three cylinders would make a respirable and fresh atmosphere around each man. The commission advised also that the compressed oxygen be injected into the firebox to quicken the combustion, and to prevent the production of oxide of carbon. Instead of this being done, the Italian railroad companies sank powerful ventilators into the tunnels, which work automatically and are not dependent upon the exercise of (not always reliable) human will. The constructors of the Simplon Tunnel, utilizing previous experience and investigations, have so far managed the matter of health with unexampled success. The vitiation and heat of the air have been overcome by forcing through the second tunnel (parallel with the first at a distance of about 50 feet) a current of fresh air that was delivered to the workmen by means of a cross shaft, having first been cooled by passing through a spray of cold water sent in by pipes.

The action of the Italian railroad companies could be studied and imitated with great advantage by the railway corporations of the United States, especially those owning and operating lnes on the Pacific Coast. By the adoption of these suggested means, the health, comfort, and even lives, of engineers, firemen, train crews, and of the passengers, would be greatly conserved.

New Road in Mexico.—Arrangements, it is claimed, are under way to construct a new railway in Mexico, a new north-and-south line in the Mexican Republic as far as Guadalajara, at a cost of about $30,000,000. It is said that on his return from the Orient, Mr. Harriman will take a trip down to Guaymas, Mexico, to look into this project. Southern officials in San Francisco are making arrangements for this trip. Guaymas is the terminus of a Southern Pacific branch running from Benson, Ariz., by way of Nogales. At Guadalajara the new line will connect with the Mexican Central, thus furnishing a new and shorter route between San Francisco and the City of Mexico. President Diaz has granted a concession for this line, together with a subsidy of $25,000 per mile, and it is stated that Mr. Harriman has deposited $25,000 with the

Mexican officials to guarantee a faithful compliance with the terms of the concession. This new line is to be called the Cananea, Yoqui River and Pacific.

Heaviest Travel on Record.—All the railroads terminating in San Francisco agree that travel to the Pacific Coast from the East has never been so heavy as during the summer just closing. The several overland lines, through their Transcontinental Passenger Association, have been maintaining eleven joint agencies on the Coast, including British Columbia, for the proper handling of this immense travel. Up to the close of August the agencies had validated 76,094 round-trip tickets, each one representing an Easterner who had come west and was returning home. The very low rates from the East were the main reason for these 76,094 persons coming to the coast, and the extent of the travel has greatly surprised the railroad companies.

Other causes besides the Lewis and Clark Exposition which were in part responsible for the heavy travel were the seven national conventions which assembled at Portland, four in San Francisco and one in Los Angeles. The Southern Pacific stated that up to the end of August 7,000 Californians had visited the Exposition. More than 3,000 additional had gone by steamer.

Will Jointly Build the Road.—President Elliott, of the Northern Pacific, has authorized the official announcement to be made at Portland, Ore., that the Northern Pacific and Great Northern Railroads will jointly construct a line from Kennewick, Wash., to Vancouver, Wash., along the northern bank of the Columbia River. Bridges will be built across both the Columbia and Willamette rivers, in order to secure an entrance into Portland. The Great Northern and Northern Pacific Railroads have organized and own jointly the Portland and Seattle Railway Company. That company will build a railroad as rapidly as men and material will permit from Kennewick, opposite Pasco, along the north bank of the Columbia river, down to Vancouver, Wash., bridge the Columbia and Willamette rivers, thus forming a connection with the present line of the Northern Pacific north of Portland. When the railroad bridges are finished they will give to the Great Northern and Northern Pacific roads a first-class entrance into Portland and a direct line to and from the East. Two years, it is estimated, will be required to complete and place this road in active operation. Articles of incorporation have just been filed in Olympia, Wash., of the Portland and Seattle Railway Company, the nominal incorporators being Portland men. The announced purpose is to construct a line from Spokane, Wash., to Seattle, and from Spokane to Portland, with any necessary branches. The total distance from Kennewick to Portland is a little over 200 miles, and the unofficial estimate of cost nearly reaches $2,000,000.

The Railway Employes' Mutual Protective Society.—This society has just been organized in San Francisco, Cal., and is formed for the purpose of protecting its members and their families in case of accidents. The directors are F. M. Armstrong, A. Korold, C. S. Dieves, R. M. Watson, H. L. Bishop and R. A. Bush.

The Great Carquinez Strait Bridge.—For a great many years no question has arisen between the opposing interests of the railroads on the one hand, and of navigation on the other, in the State of California, that equals that of the construction of a great railway bridge across the wide Carquinez Strait. For several years past this very important project has been agitated. The great and constantly increasing railroad traffic seems to imperatively demand the building of such a structure, while the construction of a bridge is very strongly opposed by all the shipping interests of the great port of San Francisco. This opposition is emphasized by the fact that the railroad desires, if possible, to build an ordinary pile bridge, that is regarded as a very serious obstruction to all up-river navigation. When Secretary of War Taft was on his way to the Orient he was appealed to by both the contending interests to settle this most important question. Immediately on his return to San Francisco he was again "set upon" by both sides, each party of contestants demanding a careful hearing of the grave matter at issue. This Secretary Taft blandly gave them, again making a special trip up to the strait. The general outcome of the matter seems to be that the War Department will probably approve of a bridge across Carquinez Strait from a point five blocks east of the present ferry slip on the Benicia side, to a point over to Port Costa near the Nevada Block. It must be a pier bridge, 65 or 70 feet in height, with at least 400 feet, or possibly 500 feet, between the channel piers. The Government engineers will agree to this, and the men interested in navigation have accepted it as a compromise. The railroad, it is understood, objects to the high pier bridge on account of the great cost of the approaches, but, as its proposed pile bridge is not favored by the War Department, it is thought that it must be a high pier bridge, or nothing.

The Santa Fe's proposed low-pile bridge across the channel at Chipp's Island, with only a 200-foot span in the channel, was also rejected by the War Department, but it is understood that that road has not abandoned the project. It is the earnest desire of the Government engineers to have the Santa Fe, the Southern Pacific and the Western Pacific all get together and arrange for one bridge over which to carry all their separate traffic. This would very greatly simplify the present perplexing situation.

Secretary Taft carried East with him a thorough understanding of this much-mooted "bridge problem," and of its great signification to both the railroad and navigation interests. The question was discussed at much length, all sides having a careful hearing. Among other things Secretary Taft said in substance:

"It is absolutely necessary that the strait be bridged. The vast and increasing commerce of California demands it, not only for local, but transcontinental traffic. This bridge does not seem difficult to determine with respect to the Federal Government in its intention to protect navigable streams. Shipping men fully realize the necessity of a bridge, and will accept a compromise on a high bridge with a span of not less than 400 feet. The Federal Government also realizes the necessity of this bridge, as it is obliged to recognize the rights of all lines of transportation in so far as they have to do with interests over which the Government has jurisdiction. The low-pile bridge has been rejected as an obstruction and menace to navigation. A suspension bridge is beyond the bounds of possibility. The railroads object to the high-pier bridge on account of the vast cost of the approaches. That is a question for the railroad engineers to figure over. Although it is not the intention of the department to impose hardships or unnecessary expenditures, yet the Government must protect its navigable waters. However, it is gratifying to know that a basis has been reached from which to carry on further negotiations, as navigation men have expressed a willingness to accept a high pier bridge."

These statements of the Secretary of War seem to settle the question of the basis upon which this matter can only be finally adjusted. It means a high-pier bridge, or else no bridge at all.

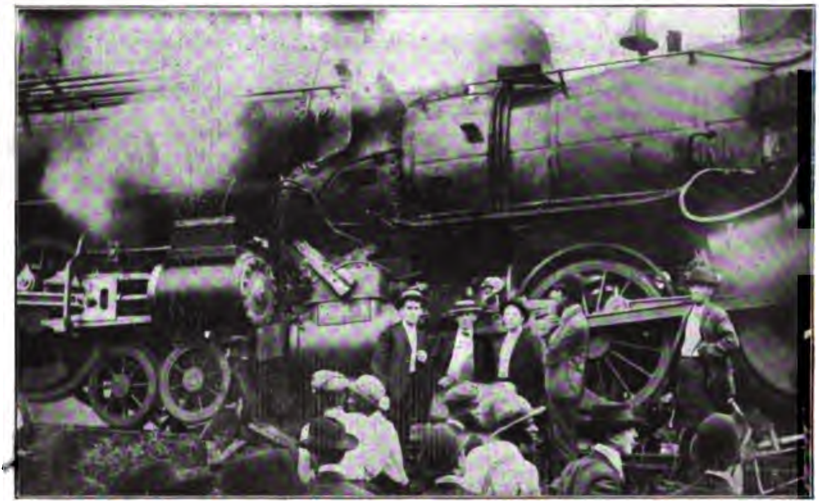
Engineer Charged With Manslaughter.—Engineer Bridgeman, who was in charge of the third section of No. 3, the train that caused the disaster at Harney, Nev., on the evening of September 19th, has been held to answer before the grand jury on the charge of manslaughter. Very few train wrecks have occurred on the Pacific Coast that have created as much interest among the railroaders as the case of Engineer Bridgeman. Flagman Detheridge, who was jointly charged with Bridgeman for being responsible for the disaster, was acquitted. In this accident only two were killed, and about 25 persons more or less injured. The examination lasted ten days. It was held in the town of Palasade, in Eureka County. A great deal of interest was aroused among railway men, who employed attorneys to defend Bridgeman and Detheridge. The lengthy examination brought out the fact that Detheridge, as flagman for the second train, which was at a standstill, went back a reasonable distance, placing signals and torpedoes warning the incoming train of danger ahead; that he started back in response to a call from the engineer of the second section, and that it was while he was returning the third section swept around the sharp curve at Harney and plunged into the rear coach of the train. Both Bridgeman and Detheridge told straight stories, the engineer apparently making no effort to shift the responsibility. Assistant Superintendent Shaunnassy told of the rules of the road regarding signals.

Railroad men state that, though Bridgeman is held on the charge of manslaughter, it will be a difficult matter to convict him on that charge. The point where the wreck occurred is immediately around one of the sharpest curves on the system, a place where the engineer had no opportunity of avoiding the danger when it loomed before him. It is maintained that the signals were too close to allow the train to be stopped in time to avoid the disaster. Bridgeman, it is stated, had been in several accidents before on the road.

Bridgeman was placed under $10,000 bonds to await his trial. For several reasons this case is a very peculiar one, and has awakened great interest among railway employes all over the State. The trial of Engineer Bridgeman will be watched with much interest.

Wreck on the Central of Georgia Railway.

The illustrations herewith are of a collision between a passenger and a freight train on the Central of Georgia Railway, which occurred August 12th, resulting in the death of two firemen and a mail clerk, all colored, and injuries to eleven others. It is stated that passenger train No. 15, engine No. 1616, in charge of Engineer John Nash, had a wait order at the junction one mile from the Macon depot for freight train No. 38, engine No. 1700, in charge of Engineer Theo. Roddy, and the time having expired, the passenger train pulled out, the collision occurring three minutes later. Both engines were badly damaged and several cars torn up, the mail and baggage cars being telescoped.



WRECK ON CENTRAL OF GEORGIA RAILWAY

WRECK ON CENTRAL OF GEORGIA RAILWAY

*The Technical Education of Railroad Employes.**

As a superintendent of motive power a generation ago, a good mechanic sufficed. He was an old locomotive runner, or a shop foreman promoted, and he was usually called "master mechanic." It was but a short and comparatively easy step from the locomotive, or the shop, to the position of head of the department. In the present day of record-making, of heavy locomotives, large-capacity cars, strenuous operation, large shops and intricate labor problems, such a step is now a hopelessly long one.

The sort of man who successfully directed the department 25 years ago would find his ability overtaxed to properly manage a single busy roundhouse today. A different kind of ability is now required to direct the mechanical department of a single progressive road, and as great roads combine into systems still another new kind of a man will be needed. He must soon be ready, for his work is even now waiting. Is this appreciated? Are the men being prepared?

Other departments have their problems, but where are the chief officers required to have as many different difficult qualifications as in the motive power department? Who must be as many kinds of a successful man as a superintendent of motive power? Where else must a man be an engineer, a business man, an organizer, an executive, a manufacturer and a diplomat? Where else are men required to know as much as these officers must know? What other railroad officer is there who must compete against conditions of labor and management with the best industrial establishments? Who else on the road has anything like the locomotive, or like shop piece work to deal with? But these are merely items among the cares of these men. Is any one doing anything systematically and seriously to permanenfly improve the labor situation? This is but another part of the problem given them to solve.

It is no small task to properly direct the design, to operate and maintain a thousand or more traveling power stations, such as modern locomotives have become, and to build up a policy and an organization sufficient for such an undertaking on a single road, let alone doing this for a combination of roads. No other class of men in the world—without exception—is ever called upon to do what is everywhere expected of motive power officers, and the demands increase continually. The problem has grown perceptibly in two years and enormously in five.

The problem is the selection, preparation and training of men. If this is provided for the rest is easy. It is said to be less difficult to secure a new president than to secure a good shop or roundhouse foreman. This is, of course, not true, but it certainly is sufficiently difficult to obtain the necessary supply of foremen of the right sort and even more difficult to secure the right kind of men in the ranks. The men are not essentially different from those of a generation ago, but the conditions certainly are different. To improve conditions it is necessary to know what is wrong, and to know what is wrong it is necessary to understand the changes which the last few years have brought.

A few years ago railway mileage was computed in hundreds, whereas now it is measured in tens of thousands. The general manager once knew all of his subordinate officials, because they were few and changes were not frequent. He once knew all of his master mechanics, station agents, conductors, engineers, despatchers and even telegraph operators. They knew him and were working for him because he was personally close to them in their work. All this has changed as the roads themselves became greater and as roads great in themselves combined into systems, as has never been done anywhere else in the world. With this change the officers have by a powerful current been carried far from the men in the ranks and far even from their subordinate officials. From personal friends, the men have become to them as mere numbers.

For example, we have one motive power officer who is responsible for the service of more than 40,000 men. How many of them can he know? He does well to really know his chiefs of staff. From a simple business proposition, administration of railroads has become like the direction of the armies of a nation. But armies do not suffer weakness of organization because of increasing in size. An army becomes larger by aggregation of units, which of themselves become no larger. As size increases general officers are added. The commanding officer does not know all his men, but the captains do know theirs. From this standpoint the railroads need more captains, because the subordinate officers now know their men as little as the chiefs know their subordinate officers.

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*Extracts from a paper by Mr. George M. Basford, editor of the American Engineer and Railroad Journal, read before the American Railway Master Mechanics' Association, June 15, 1905.—Reproduced from The Railroad Gazette.

The recruiting and training is the same for a large as for a small army, because the units are of the same size. It is not so with railroads. For example, consider the organization of a new and large locomotive shop compared with a small one. This is one reason why the large shops of today are less efficient and less economical than the small ones. Shops have outgrown both men and methods.

The recruiting of shop forces in the past was through apprenticeship. It is not so today. One of the best equipped railroad boiler shops in the country has not a single apprentice and few of them have enough to be worth mentioning. Of twelve trades in one shop plant only three were found to have apprentices, but all had shop committees. In other departments apprenticeship has been overlooked and neglected because there was so much else to do. There has been too much pressure to turn out work with existing facilities to admit of taking the necessary precautions concerning the men and the leaders of the future. The present demand for foremen with leadership talent and executive possibilities proves both the neglect of the apprentice and the distance which has grown between the officers and the men, for there certainly must be latent talent, dormant and undiscovered, sufficient for all necessities.

We need to be reminded that many men in the ranks are sure to rise in one way or another. If they are not encouraged in every possible way to qualify for higher positions on the staff they will employ their leadership in other directions, and here is an opportunity to reach one of the roots of the labor problem which has already been allowed to wait too long.

The writer recently discussed this subject with a railroad officer who, with a gesture toward his shop, said: "I have here 2,500 men and not one of them can I promote to take charge of a roundhouse which is badly in need of a foreman." It can not be true that of that number not one was worthy and prepared for advancement, but that officer believed it to be so, which is nearly as bad. Another well-known superintendent of motive power says: "I have more trouble in getting proper pay for foremen than to find good men to act in that capacity. If a job is worth $150 per month I find difficulty in getting a $150-man to take it at $90 per month." This is another vital matter. Because railroads are neglecting organization methods it is the exception rather than the rule, to promote mechanical officers to fill vacancies. It is not safe to continue this. The officers must be encouraged by promotion and they must be required to know their subordinates in order to promote them. Under the old apprentice system ability was quickly discovered, and in proof of this the best high officers of the time have come through apprenticeship, and most of them rose rapidly.

Today telegraph operators, firemen, trainmen and others are usually taken from outside the service. They receive less preparation for their work than when there was less responsibility and less to do. The recruiting system is at fault, this being considered as unimportant. It is not so in England and in Europe, where the efficiency of the individual railroad employe is of the highest type.

Apprenticeship of the old kind was an ideal method of recruiting. Boys were carefully selected, conscientiously trained, and the employer exercised a moral as well as an educational influence over them. The present pace does not permit of such a system, yet the lack of it has brought a deplorable condition, and to take its place something is needed and that quickly.

For 20 years the railroads have sought to provide the necessary leadership from the technical colleges and many strong officers have developed through what is known as the special apprentice system. It is prehaps possible to meet the immediate need in some such way; but when the technical school graduates come to the railroads, as outsiders, from the schools—as they usually do—this system is doing a fundamental injury, which is neither understood nor appreciated, but it is nevertheless serious. Every time a special apprentice is started on his course notice is, in effect, served upon the men and boys with whom he works, that he, because of his education, is to acquire in a few years sufficient knowledge, experience and ability to become one of the official staff. The effect in the shop is to discourage those who have not had such education. The special training of young men from without the ranks of the workers, for official positions, is fundamentally wrong, and, furthermore, it plays strongly into the hands of those who wish to see men leveled into classes, and considered as on uniform levels, as to the value of service.

It may be necessary to continue special apprenticeship for a time. Technically educated men are needed and will be needed even more in the future, but they should come from the ranks and not from outside of the service. The present system, or any other system, which in any way serves to discourage the regular apprentices and thereby tends to cut off the source from which most of the successful men have come should give place to a system which will encourage all by making it possible for the lowest to become the highest in the briefest possible time, because the talent is needed now. Nothing adequately meeting the needs of American railroads has been accomplished either here or abroad. That such a system is possible and feasible can now be shown.

The suggestion is that recruits in shops (and this applies in principle, though not in detail, to other service) should be taken in as apprentices. They should be given shop training, which will increase their earning capacity to the utmost, and they should be placed under the direction of men of such character and moral influence as to lead them to form correct, broad and honest views of life and their proper relations with other men and their employers. Parallel with the shop training, attendance during working hours at a school provided and maintained by the road should be required; and for this a new kind of school must be developed, as a new kind of apprenticeship must be developed—the kind that will meet the individual cases. They must not be dealt with in classes or by fixed rules. The school must be one wherein the shop and the studies go hand in hand. While the shop hours are taken for the school, home work should be rigidly required. Life must not be made too easy for the apprentices.

For example: Arithmetic is needed of the kind which will deal with pulleys, back gears, lead screws and other studies such as drafting and shop arithmetic, which will reveal the reasons for things seen and done in the shops. The school and the shop should be co-ordinate in every possible way. The local officers must be interested in and responsible for the boys in the school as well as in the shop. The higher department officers must be occasionally seen in the school room and the foreman should be identified with it. An evening a month should be devoted to a general meeting of an apprentice organization, with an occasional stereopticon talk or lecture by a foreman or higher official. Here is an opportunity for the university extension idea. The boys should visit other shops in committees and report their observations for discussions. A library for books and periodicals is a necessary element. If the road has several shops a car should be equipped with valve motion models, sectioned locomotive apparatus and appliances, electric motors and generators and even a small stationary engine for the boys to study, dismantle, assemble and set the valves. The airbrake cars have shown us how to use school cars.

As a part of the plan, every roundhouse should have a comfortable reading-room, provided by the company, with books, periodicals, charts and models. Every encouragement should be given the engineers and firemen to organize improvement clubs. The company should furnish stereopticons and occasional lecturers. Progressive education should accompany the present tendency toward progressive examinations. Here is another opportunity for university extension. Engineers and firemen should be educated to do their best, and it is important to bear in mind the fact that the difference between the work of the best and of the average man represents more to the road than the economies to be obtained from the best fuel-saving appliance or invention ever brought out.

An important opportunity for exerting a strong moral influence is available in this plan and an insight into the history of nations, political economy, the history of labor and the proper relations between employer and employe can be given. The scheme is not Utopian but practical, and the way is plain. The idea has been put by Milton P. Higgins in these words: "The object is to produce many well-trained and educated workmen, some foremen, and from the foremen a few superintendents." This structure represents a pyramid resting upon its base. As long as we seek the genius we stand the pyramid upon its apex and put it into a state of nervous equilibrium. "We may hope for much from a thousand educated, thinking expert American machinists, who have the skill, education and exact knowledge of the shops. Is not the production of 100 well-educated workmen a more certain undertaking than the production of one genius?"

We are today looking for the genius and

overlooking the good workmen, but by providing for many workmen we can not fail to find the necessary genius.

This school shop enterprise should be carried out for the individual, lifting each as high as he can go. It should leave the capable student prepared for a course in technical school. An important part of the plan is a provision for sending, every year, a certain number of graduated apprentices to a technical school, for a short "sandwich" course, at the expense of the company. This should be held out as a prize or reward for high standing in the shop and school. This would provide technical men and they would be admirably prepared. Even if only one out of ten remains in the service the encouragement due to the possibility of securing such an education would affect every ambitious apprentice and every ambitious workman on the road.

It may be said that enough apprentices can not be found. Perhaps not the first day, but when the plan becomes known there can be no difficulty. In time, perhaps, the labor unions will cease to discourage and restrict apprenticeship. At present it must be confessed that little is accomplished by the apprentices we have. If the apprentice and the apprentice's father see the possibility of education in the shop, leading to the possibility of a college training at the end, the whole shop attitude should change on this and many other matters. Some of the boys will leave the service, and well they may, for there will be many others; but places should be available under present conditions, on every railroad for all who finish such a course.

The character and methods of the school have been considered and they may be discussed when some railroad is ready to seriously consider the subject.

Shop apprentices are prominent in the preceding paragraph, but the need of and the demand for education lies not alone with them. Such a school would from the first be overwhelmed with applications for evening instruction of shop men and others, including foremen. Engineers and firemen will need to be provided for and the educational plan would necessarily develop into an important factor, for, in spite of themselves, railroads are sure to find it necessary to undertake the education of their men. This can not be left to outside influence of any kind. In the hands of the officers themselves it will become a powerful instrument in dealing with the problems of the future, and especially the labor problem.

With such a system the shop could probably in time supply all firemen, engineers and men for other service, in which the education, training and the *esprit de corps*, which would naturally be developed, would be most valuable. There is no reason why the traveling engineers should not co-operate with the teachers of the apprentice schools in the development of correspondence courses for engineers and firemen and the men would unquestionably respond, certainly as well as they do at present to the commercial correspondence schools. Having the shop schools, they may be taken to the student in every department by the correspondence method, whether he is on an engine, at a telegraph key, on the track or in an office. The development may be as broad as the need, and correspondence courses may be made a vital factor in the plan, and university extension an important element. Those who can not attend the schools must be provided for.

Some will say, "But where are the men who can conduct such schools?" They must be the best teachers to be had and they must thoroughly understand the apprentice. These men are now doing somewhat similar work in many of our large cities and they are to be found when wanted. Some one else may say that all this has been done by the Baltimore and Ohio and proved a failure. There were reasons for that failure. The plan here outlined is believed to contain vitally important elements which have never failed, perhaps because they have never been tried. Some one will speak of the expense. The cost is insignificant. The work must not be started except upon an appropriation sufficient for ten years, which can not be thoughtlessly withdrawn even by the directors themselves. That length of time will be required in order to give the idea a proper trial and in that time the benefits will obscure the cost.

It seems possible that the future of the motive power officer and of his department, and of other officers as well, may become clearer and the outlook may be brighter when the needs are provided for in such a way. The word education, as distinguished from instruction, seems to represent what is needed, and it is clear that the education of managements and owners of railroads is the first step to be undertaken. If this is done there will be no problem too difficult to be solved, but if not there are many impossible of solution. Only in some such way as this can the officials get close to the men directly or indirectly.

No railroad with a constantly changing policy, or one on which the tenure of official life is uncertain, should for a moment seriously consider such a suggestion as is here outlined.

Shall this (or something better) be done? The writer believes that the future, not only of the motive power officer, but of the railroads, and to a large extent of the country, depends on the answer.

There is no need of worrying about the college man, he is fully capable of taking care of himself, and it will be really a favor to him to put him entirely upon his own resources. He should not be handicapped by being labeled, because of his education. Special provision in the shops for the graduate of a technical college should not be made. Employers should not modify their methods for him. To do so is not advantageous to the college man, or to the other men in the shops.

The condition and position of the superintendent of motive power should be elevated and improved, so that young men will see that they can afford to spend their lives preparing for the highest positions. They will then be impressed with the fact that to secure such a position is worth a lifetime of conscientious and unwavering effort. This is not the case today.

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The Division Engineer in Railway Work.[*]

In general, the division engineer in railway work is the engineer nearest in touch with the men—the employes. He has human nature to deal with, and needs most to be human in nature. Said Stephenson, "The most important branch of engineering is the engineering of men." The man who has men to handle need never be lonesome, and must sleep nights, and nights only. This human element, that so largely enters the province of the division engineer, will prevent rust if squarely met, and will finally bring disaster if dodged. When, to theoretical engineering you add practical engineering, and to that add human engineering, you have the division engineer. And this defining sentence probably need not be restricted to railroad work only.

The theory, in fundamentals, we learn pretty well in four years in a technical school, but go on elaborating it more or less through life. The theory gets homelike. The principles are as familiar as old friends—nothing new. And we learn practical engineering in the next ten years or more, or go far toward doing so. We have precedents to follow. One bridge is, in the main, like another. One tunnel half like another, and the other half like a third. Once in a while we meet novel conditions and they are welcome milestones in our lives. We fairly grow careless through monotony, on the whole. But, the engineering of the humans we meet and have to deal with, keeps our blood circulating, sharpens our wits, turns our hair gray, and brings on that disease of civilization — neurasthenia (nervous prostration). The human race is not monotonous. No two are alike. Seldom is it that two even look alike; and, if one looks like the other, that other will get even by acting the contrary way. The Great Architect of us all never duplicates. Resemblances may be, but likenesses, never.

The theoretical principles of engineering are as broad as the universe; the practical principles may be followed all around the world subject to the laws of climate and of commerce; but human engineering is racial, provincial or individual. A volume of surprises! Open it and read. There is more thread to the story than has a dictionary. The world stands shoulder to shoulder like substantives with ne'er a connective nor qualifier, and it is this last phase of engineering which is latest acquired in the education of engineers for the rank of division engineers. This human engineering separates the assistant engineer from the division engineer. It is the quality which bridges over the chasm between the assistant engineer and the roadmaster. As a qualification in engineering ability, it commands a higher salary than did the added qualification, which in turn made us draftsmen, instrument men, or assistant engineers. Too much stress can not be placed on the value of the study of men when a man is an assistant engineer. When one can do any of the field and any of the office work on the division, it is most natural to think he can handle the work as a division engineer, but he would probably be unreasonable with foremen and be an expensive man for the company. He knows the theoretical and the practical engineering, but he does not understand human nature, and, therefore, will not succeed in handling men.

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[*] Paper, by Willard Beahan, Assistant Engineer, Lake Shore and Michigan Southern Railroad, read before the Western Society of Engineers, May 3, 1905.

In my observation, it is the inexperienced and weak foreman who is most apt to have strikes. Since a strike may be considered the extreme of ill discipline and failure in management we may safely say that lack of experience or of fitness on the part of those who handle men brings on much of our labor troubles. In my observations, most labor troubles with gangs of men are not from a question of wages. Bad treatment is a more frequent cause of trouble. Most of the ill treatment comes from a want of knowledge of men on the part of some one in authority. Men very seldom become dissatisfied because worked too hard. A man who allows loafing in the gangs is never liked by the men, and will soon have trouble. Lack of knowledge of the work on the part of some one in authority causes many of our strikes. Someone somewhere thinks he knows the engineering of humans, when he is woefully ignorant of it. That causes the trouble, and the higher in authority that man is the larger the trouble, and the less willing that man is to listen to others, before making up his own mind, the oftener the trouble will occur. Human nature is provincial. You may know the labor on one division, but if you go on another division and feel too wise to listen there you will find a phase of human nature quite new to you, and you will early have trouble. Egotism is cured by studying human nature. If you would handle men successfully, you must keep your ear always close to the ground and your heart open to appeals from the men in kindly sympathy, and your mind open to new convictions day by day. The man who thinks he never made a mistake, the man who has things "pat," or the man who has a "system," is each unfit for authority over men. Such men, whatever their engineering ability, are not fit, and will never be fit, for division engineers. They lack in human qualities.

Strikes are about as old as history, and for them there is no panacea. Anarchy is an epidemic which may break out at any time. Intelligent handling of men, and sanity of mind of employes are the present hope for peace.

For the purpose of this paper we will assume that the division engineer reports directly to the chief engineer and is reported to by the assistant engineers, instrument men, rodmen, and other engineering assistants. The clerks of the division office report to him. The roadmaster and master carpenters with their forces, report directly to the division engineer. What duties and what attitude does this require from the division engineer? Toward the chief engineer, his superior, he must have loyalty. This means more than obedience. It is obedience of the heart, as well as of the head and hands. No circumstances can justify less. Disloyalty should be as repugnant to a division engineer as informing is repulsive to an Irishman. And when the organization you chance to be with seems to expect you to be disloyal to the man you were explicitly told to report to, you quit. You are in a crazy organization, an impossible one, and you are wasting time.

Now, loyalty means honesty. Therefore, when your superior asks for your opinion, give it to him. He is entitled to it. He has asked for it. Do not give him a reflection of what you think his opinion to be, just to make yourself "solid" with him. That is not honest. If he is competent, he will see through it all. You do not help him any. It is your duty to help hold up the hands of the chief engineer. Try to do that and despise trying to curry favor. Always be respectful to a superior. Your patience will be tried to the limit, but be patient. His clerks will write you letters over his signature, which, placed before a jury of chief engineers, would consign your superior to an asylum, but a division engineer should be above "getting even" with the clerks or draftsmen. In that better land to which good division engineers go, there'll be no letters written by machinery.

The division engineer must be the master of his temper at all times. He must gratefully remember that his is the highest rank surrounded by men who have been specially trained in their specific work. His superior is not so fortunate and has greater trials than a division engineer. Long suffering is not pleasant, but it is, nevertheless, a part of professional training. You do not need to have trying times with but one office now. Promotion will make you worse off, possibly, and just to relieve the strain, you see to it that your clerk or your office boy do not write advice to roadmasters, or over your name seek wisdom from bridge men. You do not need to make an endless chain of it. You have time to go and see, and advise, and inquire, and decide without writing many letters or sending many telegrams. Or, if you have not, send some one to do it for you. Correspondence is essential and unavoidable to a chief engineer. It may be largely or altogether avoided by a division engineer in dealing with subordinates, for he is dependent of necessity upon that human element of which we have spoken. In my experience the fewer letters a division engineer can write to foremen, roadmasters and master carpenters the better. Some of us can perhaps do more through office supervision than I am able to do, but letters can never take the place of meeting a track man or a bridge man on the work and looking it over and talking it over there. If you are not the kind of a man to do that, I think you are not just the kind of a man for a division engineer. You may be able to do better work and of a higher grade, but that particular kind of work you can never do best. The gangs want to see the "old man" around pretty often. They want him to see how tough a job they have, or how well they are doing the work, or how hot it is there, or how cold it is. They will each man work the better for it and they will not leave to go to another division, nor strike for more pay or overtime. All troops like to see their brigade leader. He means more to them than bulletin orders or messages by courier from the general in command of all the forces. Men follow best by sight and learn to love by sight alone. That "absence makes the heart grow fonder" never applied to a pile driver gang. Is it easy and nice driving? They want you to see how fast and how well they are driving the piling. Is it hard and unhandy driving? They want you to see how hard it is to get the piling down and how difficult to get at the piling to keep them in shape at all. Maybe you can suggest something to help. Maybe you can send them a better appliance. In any case, you can share the credit, the care and the responsibility, and that alone is a help. In this connection one scarcely need say that many letters of instruction to assistant engineers and the junior engineering assistants are not in place from a division engineer. If on maintenance, have as many of them as possible work from your own office, and tell them and show them; not write to them. You are the school teacher of the engineering organization. A correspondence school is better than none, but it is not the best. Teaching by personal contact is conceded to be better. You remember best the personal qualities of your best teachers; not their system nor their syllabus. You are training younger men to be engineers and men. The closer you are to them the more you can do with them. A division engineer who writes, by preference, letters of instruction to engineering assistants of any grade, will not be successful nor long remembered. His division will not be handled well in the eyes of the chief engineer, and his assistants will not stay well with him, nor will he stamp his own individuality upon them.

Organization is one of the important problems of the division engineer. In construction work this is less difficult than on maintenance, for then he practically has but two classes of labor to deal with, viz., the engineering force and the contractor's organization. That engineering force can be organized, equipped and handled quite along the lines of the regular army, but much liberalized. The army furnishes the skeleton of a good organization, but must have flesh and blood added to be used in civil life without revolt. Obedience and regard for rank we must have. Salutes are out of place, and an engineer organization needs to be a pure democracy. Toward contractors the engineer should show justice tempered with mercy. The division engineer should inculcate that idea in his assistants. An excellent chief engineer laid down this rule to a division engineer on railroad construction: "It is your duty to stand between the contractor and the company, and say what is right in equity." The general clauses of contracts give large powers to the engineer. These are to discipline bad contractors and protect the company from weak ones. They are not intended to be insisted upon always. Never make expenses for a contractor which in no way benefit the company. Make the company pay for mistakes of its own employes. Never keep a contractor waiting. Never accept better treatment from him as a division engineer than he gives a rodman. Consider, so far as you can, that all men on the right of way—engineers and contractors—are all under the division engineer, in a way, and make them each and all treat the others well. "Line up" the biggest contractors yourself whenever necessary. A division engineer on construction is boss of the right of way so long as he does not come between the contractors and his forces. He has a not difficult position from the standpoint of organization.

But, on maintenance, the division engineer has some trials with subordinates. Assistant engineers will get over into the province of master carpenters and roadmasters. Even instrumental men incline to the same fault. Time needed for checking levels and spans will be wasted "chumming" with a foreman and giving him advice. About the third year out of college we feel disposed to instruct the pile driver foreman. About the twenty-third year out of college we will be glad to let the pile-driver foreman do the driving. Of course, bridge men and track men do not join well. There is by nature a neutral strip between a bridge and the track beyond, over which rolling stock is supposed to pass unguarded by either track men or bridge men. Those men must bridge the gap, and out of which fund must this cost be met? Should track men "wait upon" bridge men and mow the lawns of agents, or is that last a transportation charge? Is a switch light rolling stock or right of way? Is working a coal shed track repairs or train expense? All these and some more are questions for a division engineer.

As a general proposition, the man to do the work is that man who can do it best for least money. Leave to others systems of organization. Have no experiments to try yourself. Do not strain to make a record, but be content to let it follow you. From day to day assign duties to the man who can do the work cheapest and best, and leave the new ideas to theorists and the record to Providence. Divide the work along the lines of the different crafts and place the maintenance of a structure under that craftsman who can do the major part of its maintenance. Aid this craft, where economical, with other or cheaper labor, but keep the responsibility undivided. It is better to have a gang of laborers in the bridge department than to call on section men to do such work for bridge men. It is better to have an axeman in an engineer party than to take a section man to drive stakes regularly. Give each man his own kind of work to do and keep him at it.

We have said that the division engineer is school teacher in his department. It is a graded school. Discourage a rodman who wants to do an instrument man's work before he is a first-rate rodman. Do not expect or allow the clerk to do things which an assistant engineer only is paid for knowing. It is not fair to expect a man to do work regularly which is beyond his grade. You are weak if you ask your clerk to be yourself when you are out on the road. You are silly when you have a pet whom you allow to do the work of a higher paid man who is there to do his own work. Observe not only rank but seniority, and if a man is not fit to keep up his own work, get rid of him. Make men do the work they are paid to do, or quit. Never have pets. If you dislike a man never let him know it. They are all your brother officers.

Never let an older and ranking man misuse another. Talk to him sharply and promptly. If he will not finally treat the younger engineer well, get rid of him. To be unfit for authority entirely unfits any engineer for taking charge of an engineer party. Make engineers of equal rank get on well together. Keep at it until they do. Never lose your own temper and never allow any one else in your professional service to do so without notice and remonstrance and final prevention.

Lay out field work on maintenance in trips to cover several pieces of work—each trip with least travel. When that trip is arranged, do not break into it with work that arises at the time. Anticipate work as much as you can. Let some work wait as it can until urgent work takes a party near there. This idea will save on large maintenance divisions about $100 per man per year for traveling expenses, and do more work and do it better. Never start men out so they can not tell when they will get back. And if, as a division engineer on railway work, you usually work the men nights or Sundays in addition to full week days, you do not know your business. Another man can take your engineering force and do more work for the same money and please both the men and the chief engineer better. You are not working your head well. You do not plan well. You do not organize well. You have reduced the speed of your men—a sad fault.

Avoid divided responsibility where you can do so. If you can set apart one piece of work for one assistant engineer, have him do it, and let no other man of equal rank go there. Assign work of their kind to instrument men and leave them alone responsible to you. Track and bridge men are divided by territory, and keep foremen so divided. Always be able to hold some one man logically and consistently responsible. Give him time and help to do the work. Let him follow his own devices all that you see you safely can.

You see him start; visit the work with him quite often, and occasionally without him. Ask him about progress and cost, just to check your own opinion from what you saw there, and to keep him alive to the situation. If he gets into trouble, go out and shoulder the trouble with him, and if serious trouble, be ready to take all responsibility and be on hand for the emergency which you have foreseen or feared for some time. If he does ill, tell him quickly and prove what you say. If he does well, publish it among the men, and tell him, and write the chief engineer, commending him and citing the facts. If you can not praise a man oftener than you blame him, let him go. And if you never praise him when he deserves it, the time will come when he is deaf to your criticism.

Never think aloud that you know as much about track as a trackman, or as much about bridges as a bridgeman. Listen to their practical opinion and leave them alone to their practical handling of their work. The company is not paying you to be a roadmaster now. If you have not more confidence in the judgment of the superintendent of B. & B. who reports to you as to the fitness of a wooden stringer than you have in your own judgment, then you are egotistical or need a new superintendent of B. & B. It is very hard for young division engineers to curb their knowledge. Just to help yourself to a more correct view, suppose you go to the chief engineer and say a certain bridge is unsafe. When he seems to hesitate to tell you what to do about it, just casually mention, in addition, that the gray-haired superintendent of B. & B. has also examined that bridge, and he, too, thinks it unsafe. Then observe with what alacrity and feeling of relief the chief engineer tells you to rebuild the bridge. No division engineer is sufficient unto himself. In his younger days it may be cured. In his riper years he is a hopeless failure. I respect the judgment of the roadmaster and bridge superintendent. I realize how dependent railroads are upon track and bridge foremen, and I trust that as a division engineer I will never lose my inclination to look up to them rather than to look down upon them. They know much that I have never had the time nor opportunity to learn. As engineers we can never increase our usefulness on maintenance without first having high appreciation of these foremen of maintenance gangs.

The last lesson in its order to be learned by a division engineer is the relation of his position to that of other division officials. This relation varies with different roads. It may vary from year to year on the same road. It is unfortunate to our profession that so often we are in a transition state. It puts us in a bad light at times. It tests any organization to change front. The civil engineer is far more used on maintenance of railroads than he was a score of years ago. We are not all of us ready for the new duties and the new relations. A construction engineer is not wanted to maintenance administration. A maintenance man trained to one type of operative organization finds it hard to adapt himself readily to a very different type when going from one road to another. Since the civil engineer is growing in favor on maintenance he will suffer from jealousy. Prosperity breeds enmity, just as acquiring wealth brings hatred to our door. At this time all our paths are not paths of pleasantness. As engineers we are coming to be useful, if at all, just because we can put a dollar where it can earn more than where another man can put that dollar. If this is true, the corporate owners of our roads will give us the opportunity to do just that. It is not a question of type of organization—division, departmental or what not—but it is a question of administrative investment.

It is clearly the duty of the division engineer to work in perfect harmony with each and every division official, so far as lies in his utmost power. Be agreeable always. Be a good mixer, but no meddler. Never criticise other departments. Nobody wants to know your opinion on transportation, traffic or motive power. Only the fool knows too much—in this case. Help the other heads of departments of the division. Make your organization helpful to the whole division and agreeable in every way. Hold up the hands of the superintendent of the division. Study to make your part of the work contribute all it can to the success of the administration of that superintendent. This is a principle holding true whether or not you report to that superintendent.

Throughout this paper it must have been apparent that modifying conditions incident to various types of organization for individual roads could not be taken into account. The limits of a paper prevents this. General principles will apply, but there is no universal practice, and may never be. Traffic and climate and area of a system must modify. In a general way we have assumed for the purposes of this paper an outline of one of the most common types of organization. No paper of this kind can have general applications save in principle. As division engineers, some of us report to chief engineers and some to superintendents, but the relation to our subordinates and to our work remains the same in either case, and while the gift of prophecy would be needed to say to whom the division engineer on maintenance of railroads will report in the future, it now seems likely that before very long he will have charge of maintenance of way of railroads. May we be ready. Engineers, we must trust we now are; track men, we may be or soon must be; and finally we most imperatively must become railroad men. And the world has yet to see what may soon appear as the American railroad man.

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*Breaking-in-Two of Long Trains, Passenger and Freight, at Slow Speeds, When Releasing Brakes, and Methods of Prevention.**

Ever since cars were first hauled in trains, care has been necessary to prevent the car couplings from breaking apart when starting the train, while it is in motion, and when bringing it to rest under the action of the brakes, regardless of the kind of car coupling, or how substantial the draft gear might be with which the cars are equipped.

The causes of break-in-twos, when releasing brakes, may be traced to the method of handling the brakes, to the condition of the draft gear and the brake equipment, to the make-up of the trains, and to the kind of train service. All these causes, taken singly or combined, are such at times as to make a break-in-two difficult, if not impossible, to avoid, when the brakes are released at slow speed if the train consists of 12 or more cars in passenger service, 30 or more in freight service. This is especially true of modern trains, both passenger and freight, since the weight of the cars has increased rapidly without a corresponding increase in the strength of the draft gear; and so frequent and annoying have train break-in-twos become of late on several large roads that careful consideration is being given to this phase of train operating by the officials for the purpose of finding efficient methods for preventing them.

Before proceeding to deal directly with this subject, a few preliminary observations will be made concerning the forces which the draw bars and couplings have to withstand in the operations of starting and stopping trains, in order better to realize the magnitude of the difficulty with which we are dealing, and also better to enable us to determine what are the best means of prevention.

A modern passenger locomotive, for example, has a tractive force of about 30,000 pounds, and is capable of hauling on a level track a train weighing approximately 1,200,000 pounds at a rate of speed of 60 miles per hour, or 88 feet per second. To start a train of this weight and work it up to a speed of 60 miles per hour requires a distance of several miles, through which the locomotive must exert its accelerating power, and this with the average favorable weather conditions prevailing. The distance required to attain high speed is necessarily considerable, because of the small margin of accelerating power which the locomotive has after a speed of 30 miles per hour has been attained.

Taking the resistance which a car or an engine offers to being started at five pounds per ton, the total force required to start a train weighing 600 tons, or 1,200,000 pounds, will be 600 times 5, equal 3,000 pounds, leaving an available force for accelerating its motion, at the start, of about 27,000 pounds. The rate at which the motion can be accelerated will be found by dividing the accelerating power, that is, the margin of the power which the locomotive has over what is absolutely necessary to start the train, by the total weight of the train, then multiplying the quotient by the acceleration of gravity, which is 32.2 feet per second. In this case, 27,000 divided by 1,200,000, then multiplied by 32.2, shows us that the motion of the train can be increased at the rate of one foot per second at the start. As the motion of the train increases the resistance increases, the tractive force decreases and hence the accelerating power of the locomotive gradually decreases, so that the rate of acceleration is a constantly diminishing one. If the accelerating power is considered constant and of the same value that it has at the starting of the train, the time required to work the train up to a speed of 88 feet per second will be found by dividing 88 by one, the acceleration in feet per second. Performing this operation, the time required is found to be 88 seconds. The distance required to attain a given velocity is equal to the acceleration multiplied by the square of the time, divided by two. In this case, the acceleration is one foot per second, and the time is 88 seconds. Multiplying the acceleration by the square of the time and dividing by two, gives 3,872 feet as the distance that would be required under the conditions given to attain a speed of 60 miles per hour.

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Since the rate of acceleration constantly diminishes from the instant the train is started until it attains the given rate of speed, it is clear that the general statement that considerable distance—in fact, several miles—is required on a level track to work a heavy train up to a speed of 60 miles per hour, is quite true. Moreover, it is borne out by our every-day experience. These observations are made for the purpose of enabling us to compare the power of the locomotive in working a train up to speed with that of the brakes in bringing the train to rest.

When we apply the brakes and reduce the motion of the train we reverse the operation of increasing the speed of the train, or, in other words, we negatively accelerate it. In both cases force is required, and the rate at which the motion of a train is increased or decreased is the measure of the intensity of the force which is producing the change in its rate of motion.

A train equipped with modern brakes in good condition can in emergencies on a level track be brought to a standstill from a speed of 60 miles per hour in a distance of 1,000 feet or less. That is, the total average accelerating force of the brakes on a train, such as we are now considering, is easily able to do in 1,000 feet what the locomotive requires several thousand feet to do. With the car couplings and draft gear in good condition and all brakes released it is practically impossible to break a passenger train in two when starting it with a single locomotive, even though the engineer may find it necessary to take all the slack in the train, and then start forward with the throttle wide open and the engine on sand. This is because the maximum tractive effort of the locomotive is less than the car couplings and draft gear can comfortably absorb without danger of breaking apart. If, however, the slack were all taken and a supreme effort then made to start the train while the brakes were yet applied on two or three rear cars it is quite likely that a coupling would part, since it would be required to withstand not only the whole tractive effort of the locomotive, but in addition the energy or momentum of the engine and cars (due to their motion) ahead of those with brakes applied. Although the velocity of the engine and cars ahead of those having brakes applied could not be very high while in the act of starting, yet because of their great weight their momentum would be considerable; hence it could easily be conceived, without any great stretch of the imagination, to be sufficient when added to the tractive effort of the locomotive to break the train in two even when starting.

But this fact is so well known that engineers as a rule are careful to note whether all brakes are released or not before making a strong effort to start the train; and in the case of starting long freight trains care is generally exercised by them to take the slack out slowly, so as not to break it in two. Now, if we can only get engineers to realize that the brakes are capable of exerting shocks and pulls on the draft gear whose cumulative effect when concentrated upon any particular coupling is several times as great as any pull the locomotive can exert, we shall not, in the writer's opinion, find it hard to get them to heed instructions as to the best method of manipulating the brake valve when releasing at slow speeds in order to avoid severe strains on the couplings.

The forces brought to bear on car couplings when releasing brakes often come much in the form of blows, and, therefore, it will be of interest, since it has a bearing upon our subject, to investigate the force of a blow.

If a hammer weighing five pounds, moving at the rate of 40 feet per second at the instant it strikes, is brought to rest through a distance of .001 of an inch, the average force of the blow which it will strike equals its momentum divided by the distance through which it moves in coming to rest. In this case the mass of the hammer is 5 divided by 32.2 equals .158; its velocity is 40 feet per second, and hence its momentum equals .158 times 40, equals 6.320. As force is defined as momentum per second, the average force of the blow of the hammer will be found by dividing 6.320 by .001, equals 6,320 pounds.

From this we may feel reasonably certain that there are times when releasing brakes at slow speed that the average force of the blows sustained by the couplings, due to slack running out and the action of the draft gear springs when releasing the energy, due to their compression, is enormous.

Since we have seen that the total accelerating force of the brakes is several times as great as the tractive effort of the locomotive, and the average force of the blows sustained by the couplings is sometimes enormous, it follows that to prevent the train from parting with certainty when releasing brakes at slow speeds, it is absolutely necessary to prevent excessive strains being thrown onto the couplings and draft gear. This can be accomplished if during the release of brakes the head end of the train can be kept from running out or away from the rear end, or if all brakes on the train can be simultaneously released.

Where considerable trouble has been experienced from break-in-twos on long passenger trains while releasing brakes at slow speeds, the use of chokes or restrictions in the driver brake triple valve exhaust has proved an efficient preventative of the trouble. These chokes consist simply of a cast iron plug screwed into the exhaust port of the triple valve, with a hole drilled in them considerably smaller than the triple exhaust port. These chokes retard the escape of air from the driver brake cylinders and hence retard the release of the driver brakes. The difference in time of release of the engine brakes and of those on the rear car is thus considerably reduced, with the result that no violent shocks are brought to bear upon the couplings at any particular point in the train.

In connection with the use of these triple exhaust chokes it should be borne in mind that the proper manipulation of the brake valve, when releasing at slow speeds, is of the utmost importance. The handle of the brake valve should be placed in release position and held there for at least 8 or 10 seconds, in order to allow time enough for the main reservoir air to raise the brake-pipe pressure at the rear triple high enough to force it to release. That the rear triple on a passenger train consisting of 12 or more cars can not be expected to release simultaneously with those on the engine and forward cars, will be easily perceived from a consideration of the length of brake pipe with which we are dealing, and also the auxiliary reservoir volume.

A modern passenger coach seldom has a length less than 70 feet; 12 such coaches would have a total length of 840 feet; the locomotive and tender have a length of from 65 to 75 feet; so that the total length of a modern passenger train, consisting of the locomotive, tender and 12 cars, is easily not less than 900 feet. The total length of brake pipe necessary for a train of this length will not be less than 1,200 feet. Since the size of brake pipe used in passenger service is one inch, it can be seen that at the instant the brake valve handle is placed in release the engine brakes may release promptly, but the pressure can not increase sufficiently in the rear of the train for several seconds to release the rear brakes. This time is further lengthened by the feeding up of the large auxiliaries toward the front of the train, as the triples release, because of the large volume of air they require to restore the pressure. It is worth while here to remark that a 16x33-inch auxiliary has a capacity four times as great as an 8-inch freight auxiliary, and a 16x42-inch auxiliary reservoir nearly five and one-half times as great. To sum up these latter statements a modern passenger train of 12 cars requires as much air to operate the brake as does a freight train of 40 cars equipped with a large pump in good condition.

This latter statement shows the necessity for ample main reservoir capacity and excess pressure, so that when releasing brakes the brake-pipe may be quickly increased, and as the forward triple releases first the rate of recharging of auxiliaries will not then materially affect the quick increase in brake-pipe pressure at the rear triples.

To prevent breaking in two of long passenger trains, then, when releasing brakes at slow speeds, we should place the brake valve handle in release position, leave it there for 8 or 10 seconds before returning it to running or lap position, in order to make sure that the rear triples have released. In connection with this instruction it is important that the pump be throttled so as to work at a good rate of speed, say 45 or 50 strokes per minute, so that there may be a large margin of main reservoir driving pressure during the time the brake valve handle is in release position. Hence, a locomotive capable of hauling a passenger train of 12 or more cars at 60 miles per hour should be equipped with a large pump in good condition.

When brakes are released at slow speed and it is not the intention to stop or to make a second application, before opening the throttle the engineer should allow sufficient time for the rear triples to release, then pull the throttle open gradually so as to be sure not to cause heavy shocks to any of the couplings toward the rear cars upon which the brakes possibly may not have entirely released.

Break-in-twos caused by carelessness in this respect, on the part of engineers, may be almost entirely prevented by proper instruction, coupled in some cases with a little wholesome discipline. The foregoing remedies and instructions apply to modern equipment as we ordinarily find it; but where the locomotive is equipped with the combined automatic and straight-air brake the engineer is provided with means for preventing break-in-twos under almost all conditions of brake release.

The application of friction draft gear to modern car equipment is also a great help toward the elimination of break-in-twos, although of course shocks can be brought to bear on car couplings, as we have already shown, when releasing brakes on a long train, which no friction draft gear can withstand. Even with this style of draft gear it will still be necessary to guard against the slack running out away from the rear while the brakes are releasing.

It is hardly necessary to add here that the practice of kicking off brakes, at one time quite a favorite method of handling them on short trains, should never be indulged in with long passenger trains, since it would almost inevitably cause a break-in-two.

With long freight trains, the instruction has always been to allow them to come to a full stop before releasing the brakes; if the speed of the train has reduced to ten miles per hour or less, and it does not seem that this instruction can be very well changed unless the locomotive is equipped with the combined automatic and straight-air brake, and with this equipment the engineer should not lose sight of the fact that on a train of fifty or more cars considerable time is required to release the rear brakes, and he should not therefore attempt to use steam until all brakes have had time to release; then the throttle should be opened carefully and slack taken out of the train slowly.

Since the combined automatic and straight-air equipment is being applied to all freight engines, both old and new, as well as to switch engines, as fast as possible, it seems hardly worth while to consider the best method of handling when releasing at slow speed, since the straight-air brake, fully applied, can hold the slack of the longest train pretty well bunched, and this being true, there should be little or no danger of breaking them in two when releasing at slow speeds. Without the use of the straight-air brake release at slow speeds should not be attempted.

However, before closing this paper, I would respectfully draw the attention of the members of this association to the benefits to be had from the use of the large air pump when releasing brakes. It will provide an ample supply of air at a high driving pressure, which is what is needed to effect quick release of all brakes; and the quicker and more nearly simultaneously all brakes release, the less the chances of break-in-twos because of slack running out. Also, that the better the condition of the general brake equipment with respect to clean triple valves, uniform piston travel, tight packing leathers, tight brake pipes, hose and couplings, the greater will be the freedom from danger of breaking the train in two when releasing brakes at any speed.

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NAY AUG GLEN, SCRANTON, PA. - D., L. & W. RY.

Echoes from the Firing Line

Duties and Remuneration of the Fireman.

I have noticed in Railway Club Proceedings where the fireman has been designated as the best paid man in the service, and considerable discussion on the same has been had in "Echoes from the Firing Line." I want to try and show that the fireman is about as poorly paid as any man in railway service, all things taken into consideration.

When a fireman is called, the first thing to do is to get into his working clothes, or if he happens to be in bed, get the sleep out of his eyes so he can see his clothes. When he gets his clothes on he gets something to eat and a lunch to take along, and when he gets started to the roundhouse he has to hurry to get the engine ready on time. By the time he gets his overclothes on, his lights burning, his fire in shape and takes water, fills an oil can and a lubricator, the brakeman is down at the switch tossing his lamp about, and away we go.

We couple onto the train, and while they are bumping up and testing the air brake the fireman can wet down the coal if he has a squirt hose on the engine. On many roads it is his duty to fill the rod cups, and he can do this while they bump up. He must see that the ashpan is closed and clean, that his dampers will work and not be sticking in the eccentrics or hung up with a piece of bailing wire, and he must note whether the grates are stuck or not. He must note whether the plates and slides about the front end are in place and properly fastened so they will not lose off, must see that the engine is supplied with a shaker bar, ash hoe, clinker hook, shovel and coal pick, and if any of these are missing he must run around and hunt them up, or steal them off some other engine in the same service.

When all is ready we start (and I have seen them start before the fireman was half ready), and in these days of big engines and high tonnage the fireman's business is very good from the word go, if he keeps plenty of water in the boiler and the pointer at one hundred or two hundred and enough, even with good coal to put into that "bottomless hole." More often he gets poor coal, and when he gets fine coal, dirt or soapstone, something that looks like strippings from a coal mine, it is almost impossible to keep an engine hot, for she generally has all she can possibly handle. Oftentimes we have to double two or three hills on a division, and where passenger trains are numerous, on single track it takes a long time to get a little distance, and large quantities of coal, good, bad or indifferent are consumed, the poorer the quality the larger the quantity. He never gets from one coaling station to the next without shoveling down coal and often "shining the tank." He has to get out and take water at every tank and sometimes between tanks (running for water).

With dirty coal it is imperative that he clean his fires and ashpan from one to five or six times over a division, and this cleaning fires and ashpan is what wears a fireman out faster than anything else, especially when the grates shake hard on account of lost motion in the rigging, too short a leverage, or too many sections attached to one lever. He must look after his lights, for "we won't get in today," fill the oil cans, and fill the lubricators once or twice while the engineer puts oil in those numerous holes underneath or doctors up a hot box or pin, and the fireman often has to help with this pest. Then stop to think of the signals that are given on the left side of the train.

He swallows his cold lunch on the installment plan, getting a few bites while waiting for another train, and after he has performed some of the numerous duties about the engine, or on a mountain road while drifting down hill. While we set out a car here or there, he jumps into a lunch room and gulps down a cup of coffee, one or two aged doughnuts or a piece of apple (?) pie and chews it while he wields the spade up the next hill (tastes it, too).

When he finally gets into the division point after from 12 to 30 hours on the road he performs a few duties about the engine and then goes up town, puts in ten or twenty minutes (depending whether his engine was supplied with a squirt hose) washing the dirt off his visage so he will look like a white man, gets something to eat and, if he doesn't have to double out, rents a bed and lays his weary bones down to rest, and maybe wishing to die. He may get two hours' sleep and he may get all he wants, but seldom does when business is good.

The fireman's pay has been compared with that of the shopman. We readily see that the average monthly wages of a man firing a regular engine or run exceed those of the shopman, but I hardly think this is true of the extra fireman; but let us compare the occupations. The shopman works under a roof the year round, heated in winter and opened to the breeze in summer. He does not have to come and go at all hours of day and night. He gets his sleep regularly. His working hours are regular and never exceed ten hours, and seldom reach that. He has every evening, Sunday and sometimes Saturday afternoon at home or for pleasure. He has three warm meals regularly at home each day, or at least two. When his loved ones see him go away to work they don't have a feeling that he will never come home alive, or that he will be maimed for life before they see him again. How many life insurance companies or fraternal orders bar him on account of his occupation? Very few. He never goes home after an absence of twenty-four or forty-eight hours, greets his loved ones, eats a few bites, says good-bye and is gone again for two or three days. He goes home clean and neat, because the company furnishes a place for him to remove the grime before he leaves the shop. We admit that the boilermaker's work is hard on the hearing, but did you ever consider the din in which an engineman works from one end of the division to the other?

Now, I am a fireman, but I have looked at this pay question from different points of view, and have discussed it some, too, and I honestly believe that the enginemen on both sides of the engine are today the poorest paid class of men in railway service. Let me give a few reasons. The railway companies have increased the weight of their motive power from 50 to 150 per cent. more than it formerly was, and the duties of the enginemen have been greatly increased thereby, it requiring more time to get one of these big engines ready for a trip. They consume enormous amounts of fuel and water. They have twice or three times as much machinery to be taken care of, therefore, increased work and responsibility.

They have increased the hazardousness of our occupations. How? Bigger locomotives mean greater tonnage. Greater tonnage means longer, heavier trains. Can a long train be stopped as easily as a short one in case of an obstruction on the track? Not by any means. These monster engines are harder to get off of in case a man has to jump. In some cases railway companies have put on heavier locomotives before getting their roadbeds and track in shape to stand the strain of this increased weight. The speed of passenger, express and mail trains has been increased greatly, and while the roadbed and tracks are kept in good shape, we must pass switches, frogs, highway crossings, way stations, block towers, mail cranes and water tanks at this same rate of speed day or night and in all kinds of weather. I am not a boomer, but I have fired on four different roads in the past four years (three of them trunk lines) and I know such conditions as I mention in this article exist.

They have not decreased the pay of men in other departments when the duties and hazardousness has decreased. Have they increased our pay with the increase of duties? Almost all over the country we have received increases in pay through our protective boards, but so far as I am able to ascertain these increases are small as compared with the increased responsibility, hazardousness and labor, and with the prosperity of railway companies, for if all the reports we read are true they must be in a prosperous condition. If they are not in a prosperous condition why do these companies continue to operate the railways, and how is it that stockholders make millions of dollars each year? It is partly due to the fact that the wages of their employes are kept down.

MEMBER.

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A Word from the Q. & C. Boys.

I will try and let you know how the boys on the Q. & C. are getting along. As to the boy on the farm, about whom I read in the September issue, I think he has got a pretty good job. He can be his own boss and go to work when he gets ready, and quit when he gets ready. I know he is living on the sunny side of Easy street. I hope some of the Q. & C. boys scattered around the country will pick up the Magazine and read this letter. I believe there are more of our boys scattered around the world than there are from any other lodge. Well, I must say before I go further, that while

I have been reading articles in the Magazine, we have got pretty good jobs, after all. Of course, we don't get as good pay as they do in the West and other parts of the country. We have got but four battleships, and they are run from Somerset to Burgin on a turn around, for our bridges are not strong enough for them. The rest of our engines are somewhat smaller. We have a fast freight run which pays the boys very well. On this run the fireman only works twenty days a month. He gets about thirty hours' rest at one end of the road and twelve hours at the other. The run on our division is a daylight one. We have some good passenger runs also, which pay very well for a run of 177 miles, and when we get half way over the division there are men provided to clean the fires. Our tanks hold about nine tons of coal, and we burn pretty nearly all of it from one end of the road to the other, and on an average it is pretty good coal. Our schedule is five hours and five minutes for the 177 miles, and we can make up about 35 minutes on the schedule. We have a small eight-wheel engine which double-heads us on the mountain division if we have over eight cars. There are twenty-two tunnels in ninety-two miles.

Our superintendent has resigned and gone with the Norfolk and Southern. I must say we have lost one of the best of superintendents, and I know the boys on the Norfolk will be pleased with him. He has accepted a position as general manager. I would like to hear from some of the boys on that road.

MEMBER.

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No Such Thing as Poor Coal.

I am of the same opinion as the rest of the well experienced firemen. I have had two years' experience in steamboat and in stationary firing before I went on the road, and from that time until now I have burned a few grades of coal. Now, take for instance the Bay City and St. Saganic coal. You will find in burning this only a short time that it will run all over the grates and down through them, and stick there like a piece of lead. It appears to me to be like some sort of mineral and glass. I have burned this on all of the great lakes, from Lake Superior down to the end of Lake Erie, and, yes, as far as Tonawanda, New York. Well, when we would get that cargo of dirty, clinkering coal burned, we would probably get a batch of Pittsburg, which was very fair, but the Massillon coal is my favorite. I do not know if any of the brothers ever burned it. I must say that there is scarcely any ashes or clinkers to that coal. My watch on steamboat service was six hours at a time, and while burning the Massillon coal I often had no occasion to clean my fire. All I would have to do was to take my T bar and run it under the fire on the grates and the ashes would all shake through, and if there was a clinker I would pull it out with my clinker hook. It is a pleasure to fire with coal like this, three to six shovels at a time—firebox was 6 feet long and 4 feet wide. There were two furnaces this size. Of course a large furnace would call for more fuel. When I put in a fire it would last me from seven to fifteen minutes. We carried 126 pounds of steam, working the stiple compound engine in a 6-inch cut-off, turning over 113 revolutions per minute. When I was using the Bay City and St. Saganic coal on the same length of a shift, and engine working the same, I worked three times as hard as when I was burning the Massillon coal, and I could only hold from 90 to 110 pounds of steam and had to clean my fires two or three times. The clinkers were so hard that it would take me a long time, with the kind assistance of the engineer, to break them up small enough to get them out of the door.

Now, when a good true fireboy has such coal as this to contend with he is up against it good and proper; yes, and out in a storm and the sea rolling mountains high, then is the time I would like to see the fellow who says that there is "no such thing as poor coal." You all know who I mean, the general master mechanic of a prominent Southwestern road. I would like to place him alongside of me just for one hour. I expect that he would get his paper collar somewhat soaked with sweat.

As I have said, I have had the poor class of coal in a boiler room in Michigan, where I was in charge. I have seen them shut down on account of not having any steam, and all on account of poor coal. We would have to let our firebox cool down and get in and take out the grates and chip that clinkered mineral substance off with a cold chisel before we could use them again, but since I came on the road where I am now employed, we sometimes get the Montgomery, Indiana, coal, which is pretty good. Then we get coal from Breese, Illinois, which sometimes is awful dirty, while at other times we get a good class of coal, but there is more or less clinkers in all of it.

Well, brothers, I do not profess to know all about firing, but I know when I lay the old scoop down there is no need of anyone else picking it up and trying to make her steam. Do you know what I think about that fellow who says that there is "no such thing as poor coal?" Well, I consider that he does not know much about firing an engine. I think that he must have gotten tangled up in a cyclone some place, and in order to get out of it he thought perhaps he would swallow it and free the outer part of his system and then do the hot-air shooting afterwards by degrees, but sometimes such fellows never get through shooting hot air. There is no fireboy who handles coal any length of time and takes an interest in his work but knows that the best coal ever mined has a certain amount of dirt in it. I have been burning coal for this road over a year now, and those words "no such thing as poor coal," do not sound good to me, but more like the echo of a whistle come and gone.

MEMBER.

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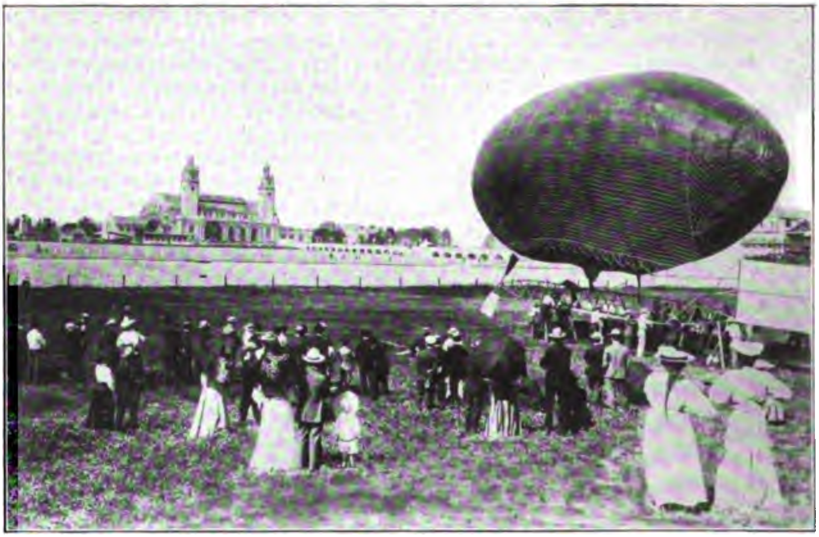

LINCOLN BEACHEY STARTING ON A FLIGHT IN THE BALDWIN AIRSHIP FROM THE LEWIS AND CLARK EXPOSITION, PORTLAND, OREGON

Technical Contributions

The Slideometer on the Air Line.

Ever see a slideometer? Know what it is? It's an apparatus carried in an inspection car or caboose that registers the degrees of shock when the train is violently bunched or stretched. We have one in active operation on the Air Line, and you couldn't guess who is responsible for its being in use here.

You remember that Conductor Timothy Grogan, of the freight service, used to be the worst back number on air of any man on the road, bar none. Well, Grogan has reformed, and, like a reformed sinner after being converted, he now goes to extremes. From his new point of view he believes that every railroad employe from crossing watchman to the G. M. should be an air-brake expert, and Timothy is getting pretty close to the air himself all right, and he is getting a reputation along certain lines.

Grogan has certainly had experience, and last spring it was responsible for the blossoming forth of an idea that took possession of his mind entirely until he finally developed it to his own satisfaction and the interest of the railroad officials.

I was curious to know what Tim had on his mind, and interviewed Patsy Dunn, his hind brakeman. Said Patsy:

"Grogan's makin' blue-prints wid white chalk an the walls iv the caboose. He carries plans and specifications in the crown iv his hat. 'Twas in the siding at Dexther that Grogan was usin' the milk platform to stand upon whilst he dhrawed do-dads an' monkey-doodle fixin's ahl over a boxsh cahr loaded wid dhry beans, which we had to set the same cahr out at Plum Center an account iv a pair iv hot jorenels we could do nawthin' wid. An' the agent, seein' thim same scroo-gees an the cahr, thot 'twas the sign-writin' iv the Yigg min, an' holy bo!—if he didn't have Terry Dee an' his siction b'yes watchin' the cahr ahll night—an' it loaded wid beans! Oh, dear! It's crazier Grogan is now than whin he knew nawthin' at all."

I rode with Grogan and found that he was designing a slideometer, to be erected in his caboose, and to enable him to "show" people "from Missouri" and those on the Air Line the extent of the shocks to which his train—of which he is responsible—is subjected.

In principle it was the same as the slideometer in common use, but he had attached a long "scale bar" to the side of the caboose lengthwise, with a sliding weight mounted upon it, resting normally at the center of the bar. A jerk or bump of any moment would cause the weight to slide toward one end or the other, its distance of movement being proportionate to the violence of the shock.

About the time the thing was finished Grogan and the superintendent of the Central Division went fishing, or something, and when they came back the boss was loaded up on the subject. He was in Tim's caboose, inspecting the apparatus, when the yard engine threw a couple of loads in against the car, in just the ordinary way, but the boss met the cupola locker head-on—and the first thing he did after righting himself was to run to that slideometer and make a note of the gauged distance the block had been displaced. "And that's the thirty-day mark for our engineers," said the Old Man, rubbing his head; and I believe that incident opened his eyes to the necessity of doing something to prevent the inordinate shocks to our freight trains, and in having something tangible in evidence of the severity of those shocks besides the broken cars and draft-gear—it's always claimed as "old defects" and a "light application."

In the Smithville shop yards the track termed by the switchmen the "Dolly" was filled with the various classes of freight cars afflicted with divers and sundry disorders common to their fast life on the railway, awaiting their turn for repairs in the car shop. From among these the superintendent selected a number of cars with draft-gear in good condition, to use in making actual tests of the action of the slideometer, in order to secure data as to the shock required to damage draft rigging, with the corresponding distance of sliding movement of the slideometer weight.

Mr. Grogan's device was attached securely to an empty wooden gondola and set on an empty track to receive punishment, which was delivered by an engine whose tender was fitted with Westinghouse friction draft gear, and five gondolas coupled thereto, also equipped with the friction rigging, followed by five more coal cars with common draft gear, the latter five as part of the sacrifice to Timothy's genius.

But the Old Man declared that the results were worth the expense, and he found just how far the weight moved to indicate a shock that would break a knuckle, extract a drawbar or telescope a car.

It was decided that each freight conductor should, in turn, carry the slideometer one month, Grogan to have the first throw, and the superintendent detailed a young fellow from his office to ride with the machine and note in his book the time and place of the occurrence of shocks sufficient to disturb the slideometer and the distance of its displacement.

During the ensuing month the trains to which Timothy Grogan's caboose was attached met with the usual casualties incidental to present-day freight train operation. Quite an amount of damage to car equipment and lading, and two cases of personal injury occurred and were reported by conductor and engineers, but the division superintendent deferred his investigation, explaining to the general superintendent that he wished to have the latter present and investigate the cases collectively at the end of the month.

Finally the day of official inquiry came. The first case taken up was at Clear Creek, where the train broke in two or three parts. It seemed that there was a slow order at that point and the engineer had air-braked the train down to 8 miles an hour and then released the brakes. There were 60 cars of air, and 3 non-air-braked cars to the rear loaded with building stone. The brakes releasing first at the head end of the train, the slack stretched so violently as to break a knuckle and separate the hose between the rear air car and the stone. When the hose parted the air brakes again applied *at emergency*, jerking out two drawbars at different points in the train, and the rear cars of stone collided with and telescoped the rear air car.

The testimony of the slideometer was necessary only in regard to the first separation, and the boy had recorded it all right, but was knocked off his feet before he could replace the slide—which really made no difference. The slide was jerked so far when the slack stretched after releasing the brakes that the trainmaster insinuated very broadly that the engineer had opened the engine throttle before the brakes were fully released, but that was denied and proven.

Well, *who was to blame?* Engineers had been instructed not to release brakes until coming to a dead stop, but what were retaining valves applied to driver equipment for if not to enable them to make running release? And they had an order to meet No. 21, the milk train, at Brownfield, so they thought to avoid delay in not stopping at Clear Creek. The air-brake instructor was asked for an opinion, and he told them this:

"We have got 'all air' on this road before equipping our engines to safely operate it, and fixing a system and issuing necessary orders to govern its use. We know that the brakes on a freight train can not be released while running at 12 miles an hour or less without the train parting; and the driver brake retainer is only a makeshift—will only prevent train parting when conditions are most favorable, as after a heavy application and an immediate release; *then* it is uncertain.

"That a train *must be stopped* whenever it has been air-braked down to a certain speed is a bad thing, in two ways: The occasions are so frequent during any one trip that if an engineer should live up religiously to the order he would be removed from through freight service and put on the 'local'—too slow a man.

"And then, starting a long, heavy train from a dead stop uses up a lot of the company's money in the form of extra coal burned by the heavy exhaust. The cases on record show, also, more parting of trains at starting than at releasing while running. It is the greatest facility to freight train movement to be able to apply and release the air brakes while running, and that can only, but easily, be accomplished by equipping engines with driver and tender brakes that can be operated independent of—or in connection with—the train brakes. Engines that are equipped with the automatic brake only can be supplied with the additional straight-air engineer's valve and accessories at so cheap a cost that its use on one trip sometimes pays for itself in the prevention of damage to draft gear.

"When new engines are purchased—and we have five 'battleships' ordered—I believe there is practically no extra cost for the additional straight-air equipment, as the Westinghouse Company have so combined the automatic and straight-air engine equipment that by means of their new 'distributing valve' the benefits of an independent driver and tender brake are secured, and it . . . . 'does away with all driver and tender brake triples and auxiliary reservoirs, and all but one of the items of the straight-air brake schedule.'*

"The use of the driver brake retaining valve at Clear Creek did not prevent the break-in-two, but with a straight-air brake applied before the train brakes were released, and held on until the rear cars were rolling along with free momentum, enough money would have been saved to equip several engines with straight-air brakes."

The general superintendent was plainly interested, and was heard to mutter, "Plausible — plausible — must try this thing—try any old thing—stop this breaking-in-two of freight trains."

The next case was a double break-in-two that was rather expensive, and would have been laid to a burst hose (the boys have all got one laid away for the purpose), only for the sharp eyes of the "kid," and his sharp pencil and the slideometer. The hind man had to stop the train at a certain station by opening the rear angle-cock, and, although Patsy is a careful lad, he got 'em at emergency.

It seemed a chance for the bosses to take a throw at the trainmen, but the air-brake instructor stated that he had tried to get the easy-working conductor's valves put in the cabooses, where a man could operate them without being an acrobat; but he failed. And he explained how an angle-cock often requires considerable force to start the handle, but once started it goes too easily, and with the position the man must be in to operate it the most careful man will often make an emergency application.

"Pass it up," said the G. S. to the S., "and put those valves in all of the cabooses."

In article 3 there is an indemnity clause, to quote the language of the peace commissioners at Portsmouth, N. H.: A lady passenger in Grogan's caboose was thrown against the door and severely hurt, and naturally asked for financial compensation. Grogan's car was on "local" that trip—carry passengers between certain stations. Of course, it is lots of trouble to keep all of the air coupled up on local, so, of the 20 cars in his train just at that time—all air equipped—Tim only had complied with the law, and had cut in to 10 cars.

The train was running about 20 miles an hour, and the engineer had just shut off when a hose burst wide enough to produce quick-action, and the sudden bunching of the slack of only ten cars and caboose caused a shock so violent that it injured a passenger, and moved the slideometer weight a remarkable distance. The company only required 50 per cent. of the air to be operated, so the blame could not be placed on the train or enginemen; and after it was explained that the quick-action effect of the brakes is quicker throughout any length of train line than the closing of the slack between the cars at any rate of speed, it was stated by the G. S. that he would issue a bulletin to the effect that all air brakes in operative condition should be used thenceforth.

Case No. 4 was decidedly interesting. The shock was so severe that it would have hurt the slideometer boy only for the fact that he was lying down on the seat cushions at the time, feet foremost. The slideometer weight made its complete stroke and broke the end of the recording bar. A cattle drover in the caboose had two ribs broken, and one of his cars of live stock was derailed, an end demolished, and three steers had to be shot.

The train consisted of 57 cars, all air. A hose had burst behind the fourth car from the engine, causing an emergency application, which, *if it had been continuous throughout the train*, would have prevented all this trouble; but something had certainly snagged the quick-action.

Now, the air-brake man had accompanied the wreck train out to straighten up the trouble, and was heavy on knowledge. He arose to say that there were three cars in the train not braking; rules prohibited running more than two of such cars together; switchmen had acted accordingly, and had separated them.

The first fifteen cars had their quick-action triples cut in and working; the sixteenth and seventeenth brakes were cut out for defects; then two cars with their brakes *supposedly* operative at emergency, when such an application should be made, followed by the twentieth car, which was only "piped" for air. The other thirty-seven cars had quick-action brakes, all cut in and working.

The make-up of the train showed nothing apparent that could nullify the quick-action effect of an emergency application of those brakes, but there *had* to be something wrong, and, his suspicions being directed against the eighteenth and nineteenth cars, the instructor found upon investigation that the strainer in the triple-valve union of the eighteenth car was so nearly stopped up by rust and scale that no train pipe reduction could throw it into emergency. The triple valve on the nineteenth car also failed to respond at quick-action, and its defect lay in the emergency valve being slightly bent, cramping itself and the emergency piston into a stuck position.

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*Quotation from an advertisement of the West. A. B. Co.

"If the engineer had been compelled to make this emergency stop," said the instructor, "he would, at first thought, probably have been blamed for the cause of all this trouble; but you see that it was caused by two bad-conditioned triple valves—firstly, in *being* in bad condition, and, secondly, in accidentally being placed between other non-quick-action brakes, which put five 'nullifiers' together—through which the emergency action could not jump."

"The fault in this case, then," remarked the division superintendent, "seems to lie with the men in the car department. How about it, Mr. Collins?"

"Those two cars with defective emergency action," replied John R. Collins, the master car builder, "were loaded with live stock, and were delivered to us by a connecting road and placed in this train just before the train was ready to start. The inspection was necessarily brief, but complete as the inspectors could possibly make it. An emergency application would have been necessary to have found the triples deficient in quick action, and, as the train crew make the terminal test, blame can hardly attach to my men.

"But," he continued, "as we know the danger in an emergency application on a long train when full braking force can not be secured on the rear cars quicker than the slack can bunch, would it not be advisable to have the brakes tested at leaving terminals by an *emergency* application? It is the only assurance of safety."

The instructor replied that a great many air-brake experts advocated that plan, and that he saw no room for question; that the one way to prevent these disasters that seem invariably to accompany emergency applications was to apply the brakes before starting, in the same way in which they might be expected to be used on the road. And it would show up the weakness of the brake beams and other parts of the foundation brake. He fully approved of that kind of test.

And the general superintendent, while but dimly conscious of the relation between cause and effect, as evidenced in these cases, had a great deal of confidence in his men, and instructed the air-brake man to prepare the draft of a bulletin order for terminal tests to be made thereafter as recommended, having not the faintest idea of the increased revenue for the Air Line that he had thus produced, by preventing its destruction.

The fifth and last case involving the slideometer: Train of 20 loads ahead, with 40 empty gondolas and flatcars behind; the engineer made a 6-pound reduction, and the result was hardly noticeable; but when he followed it with another 6-pound train-line discharge there was a jerk from the rear end that extracted two drawbars among the empty cars, and broke the continuous-draft rods through the tender frame, disabling the engine.

If, instead of making two separate 6-pound reductions, the engineer had made one 12-pound one, the severity of the shock would have been lessened, but not enough to have prevented the break-in-two of the train, probably. Everybody knows nowadays the tremendous difference in the braking power and stopping distance between loaded freight cars and empty ones. There is no way by which the individual brake power can be increased to suit the load, either. None of the train or enginemen was to blame for the accident. The only way to prevent such jerks would be to make up the train in "blocks" of so many loaded cars and so many empties, alternately, from the engine to the caboose.

The result of this investigation had been highly satisfactory to the division superintendent, although largely the reverse to what he had expected would be the outcome of the evidence. He stood and talked directly to the general superintendent this way:

"We—the higher officials of the Air Line—have a way of thinking that accidents and the common troubles that are happening every day along the line can not possibly be blamed to us, or to defective or deficient equipment through our failure to provide proper material and expert inspection; but, really, I find that we *have* been to blame, quite regularly, too, in all those respects. But, worst of all, we have been issuing special rules and bulletin orders which require that the men shall do so and so about the air, and they are all very well so far as they go; but our men have never been held to a strict observance of those rules, for the reason that up to this time none of the officials have fully realized the gravity of the situation, and the large part of the total time given to train inspection that should be allowed to the air-brake men. I find that we—I mean myself, the trainmasters, the train dispatcher, the yardmasters, switchmen, the 'mud clerk,' and even the caller—are in too big a hurry altogether to get trains out of the terminal yards just so soon as the rated limit of tonnage has a caboose attached to one end and an engine at the other. I believe that the longer the delay in getting out of the terminal, so long as this delay is caused by honest inspection, the better; and it will prevent longer and more serious delay out on the road.

"This slideometer has shown to me that disastrous shocks occur right along, when the most reliable air-brake men among our engineers have made very careful applications, proving that we are not furnishing safe brake apparatus for them to work with. And it's an odd proposition that with this expensive air brake it is impossible to slow the train down to a moderate speed, and then release the air, without tearing the train all to pieces. And, as we can not regulate the movement of traffic to suit the fads and fancies in air-brake operation, the locomotives should be supplied with equipment that is up-to-date enough to permit train braking as good as was done by hand in the old days.

"I have just learned, during this investigation," pursued the superintendent, "that such things are possible, and that the air *can* be operated on trains of almost any length without serious shock or danger *if everything is as it should be;* and, with the approval of the general superintendent, I shall require that the *head* of each department assume the responsibility hereafter, until he can show me—good and strong—that the engineer or some other person really is careless or incompetent.

"And, as the trainmasters are wholly responsible for trains while *en route* over their division, I shall require that official on my part of the road to get thoroughly posted on air.

"We all came up from the ranks," he concluded, "but our clothes have the flavor of the special brand of polar-grease current in 1895, and we knew not the air brake then; but now it holds the controlling points of importance in any case almost, involving the operation of trains."

WILL W. WOOD.

What Ails the Triple Valve?

The triple valve is sometimes said to be the part of the air-brake equipment that makes it automatic. A very good definition of "automatic" in this case is, "it works itself." But the triple valve is not the only part of the brake equipment that is automatic, for the equalizing piston in the brake valve is also automatic in the same sense the triple piston in the brake valve is, as well as the differential piston which moves the main slide valve in the steam chest of the 9½ and 11-inch air pumps. In contrast with these parts we can show the reversing valve in the air pump, which is *mechanically* moved by the steam piston as it reaches the end of its stroke, and the rotary valve, which is moved by the engineer, or manually controlled. But no matter how automatic any part of the air-brake equipment may be, there must be an executive head to direct and govern it, if the equipment is to operate properly and at the proper time. This executive head should be the engineer at the brake valve, and if he is connected to each triple valve by the train pipe, through his control of the air pressure in the train pipe, he can direct the triple valves to stay in release position, and keep the auxiliaries charged to working pressure, to apply gently and at such intervals as he may think best to make a smooth and sure stop; or he can send word down the train pipe in the shape of a loud, fierce command for all the triples to apply brakes as quickly as possible, to hang on tight till the stop is made, and not release till the order is countermanded by a quick, strong recharge of the train pipe from a main reservoir that is ready to do business.

Now, if the equipment is in good order and properly charged with compressed air up to the standard working pressure, it will do all these operations we have spoken of, and the work will be done exactly right. If any of the separate parts which go to make up a complete equipment, whether movable or stationary, get out of order, the brakes can not work smoothly and correctly. In such cases if the disabled part is in the triple valve, the valve will do the best it can. Sometimes that best is a sudden and severe application. Most of the parts of the triple valve that can get out of order are movable, such as the triple piston and the various valves. Other parts are stationary, such as the gaskets in the joints, the unions and pipe connections.

The defects of the triple valve cause all hands on the train more or less annoyance, and it is a sad commentary on the human end of the machine that the triple valve gets no credit for the fact that it will continue to do its work good naturedly and smoothly when, in many cases, it has been neglected and abused till it is close to the line of an air-brake failure. More failures of the air-brake equipment are caused by neglect than by abuse. A triple valve that is protected from dirt and grit on the surfaces that make a rubbing contact, like the piston packing ring, or slide valve face, will last longer without attention than one that is torn apart for a careless inspection and too freely oiled, for the oil collects grit and dirt on the rubbing surfaces. Use very little—not too much. Oil is the natural enemy of the rubber seat on the emergency valve, as well as of any rubber gaskets used in the equipment.

To make a careful study of the defects it is a good plan to first learn the dividing lines that separate the various air pressures, and then note what will happen if these dividing lines do not keep the various pressures apart. In the triple valve we have train-pipe air, auxiliary air, brake cylinder air, and air equalizing with the atmosphere, or four kinds of air, if we allow the point that air separated and kept at different standard pressures can be a different kind of air.

The triple piston packing ring is the dividing line between the train-pipe air and the auxiliary air. To allow these two airs to equalize in pressure at one time and keep them apart at another, the feed port in the cylinder of the triple piston is provided. This feed port is opened and closed by the movement of the triple piston, so that, when open, the air pressures can equalize on the opposite sides of the piston, and when closed, in their effort to equalize, the air having the greater pressure will move the triple piston towards the lesser pressure. If this feed port is choked up, the pressures in the train pipe and auxiliary will not equalize promptly, and the triple valve will not operate with alacrity. This is defect No. 1 for this part of the equipment. If the packing ring is not a good fit in the cylinder, so that air can pass by it when the feed port is closed, the piston will not be operated by gradual changes in the pressure on either side of it, and that will be defect No. 2.

To make a gradual service application of the brake the piston should move with very little friction in its cylinder and the slide valve should do the same. If the piston or the cylinder is gritty or gummy, or the packing ring is so tight a fit in the cylinder that it takes considerable change of pressure in the train pipe to move it from release position, this triple will not move at the *beginning* of a train-pipe reduction, but when it does move it will be in such a hurry to catch up with the train-pipe reduction that it won't stop at the service position, but will skip that and go the full travel to the emergency position. This movement, with the plain triple, will usually allow the air to pass out of the auxiliary to the brake cylinder quickly, and with a first or initial graduated reduction that stops at less than equalization of auxiliary with cylinder will cause that triple to go back to release as soon as the auxiliary pressure is much lower than the train pipe. With a quick-action triple the usual result is the opening of the quick-action valves, which allows a sudden reduction of train-pipe pressure right at that particular triple. This, in turn, touches off all the other quick-action triples that are close enough to be affected by the sudden reduction, and all the brakes are applied quick action on the train, and with protests in varying degrees of intensity on the part of the crew. This will be defect No. 3 on our list, and it makes us forget most all the other defects of the triple valve when it is brought to our notice. Most of the other defects of the quick-action triple that cause it to work quick action when the proper service reduction of train-pipe pressure is made operate only in case the train is *short*. With a three-car train a defective triple may "dynamite" regularly, while with six cars it may or may not work properly. With ten cars and over it will work service when called on to do so.

In this further list of defects we may include a graduating pin broken, the graduating port in the slide valve choked up, the graduating spring taken out, a bad train pipe leak close to the triple, a slide valve or its seat worn or cut so that auxiliary air can leak into the space above the emergency piston, and a brake valve with the train pipe exhaust fitting removed so the train-pipe pressure will be reduced faster than the triple valve can reduce the auxiliary pressure. A broken graduating pin, if the triple is otherwise in good order, will rarely put the F-36 triple valve in the emergency position with a proper service reduction on a train of six cars or over. This type of triple valve has no packing ring in the emergency piston. When the triple piston and slide valve move down slowly, as they should with a six-car train, the emergency port will be opened slowly and the auxiliary air which passes in on top of the emergency piston will go on by it and into the brake cylinder without pushing the piston down and opening the rubber-seated valve. This statement may be a shock to those air-brake experts who theorize on the result of certain defects, but the way to find out is to try it. That is the way I find out these facts.

But remember, a triple valve that has had such bad usage that the graduating pin is broken is likely to be in such general bad shape that it gets revengeful and works quick-action every chance it gets.

How many of you that read this article ever saw a triple valve with a broken graduating pin? JOHN W. TROY.

(To be continued.)

* * *

Value of the Indicator—Part II.

Considerable doubt may arise in the mind of the reader regarding the advisability of devoting any time or attention to a study of this subject. He may conclude that as such knowledge has never been necessary in the past, and as the shopmen do the valve adjusting, that it is a waste of energy to make any effort to become informed. But we must remember that knowledge is, to a certain extent, like wealth, because the more we learn the greater becomes our capacity to learn.

It may also be argued that the possession of an indicator is not now, and at present seems to be a very remote possibility. To such, we would say that the mere act of taking a card from an engine requires very little mechanical skill or engineering ability. The most important part is to be able to read the card correctly after it is taken; in other words, to be able to study out the defects revealed by the diagram and apply the remedy. In many of the large power stations the taking of cards is a duty performed by the oiler, while the chief engineer reads and inspects them. So it is obvious that nearly all the knowledge of the subject is gained by a study of the card and the characteristics of the engine.

It is desired that the reader consider this letter more as a brief review than a continuation of the preceding article, and before studying the defects in steam distribution, as shown by indicator, let us memorize the seven important events that take place when an engine is moving under steam pressure.

1. The initial or boiler pressure, which on the diagram is termed the admission line. This line shows the exact point of the stroke at which steam is admitted.

2. The diagram shows the way in which this initial pressure is maintained while the admission valve is open, up to the point of cut-off, or where said valve closes; this line is called the steam line.

3. The point in stroke of piston where valve closes the steam port and cuts off steam from boiler; this is called the point of cut-off.

4. As the steam port is now closed to the admission of steam, it is obvious that the balance of the stroke must now be completed by the force of the expanding steam, and this is shown on the diagram as the expansion line.

5. The valve now moves so as to open the exhaust port, and the steam which has just been used escapes to the atmosphere; this event on the diagram is termed the point of release.

6. The piston has now completed its stroke, and it is now evident that communication with this side of the piston to the atmosphere has been established, and the only pressure now opposing the piston's return will be that due to the friction of the escaping steam through the nozzles and exhaust passages. It will now be seen as the piston returns there will be little or no fluctuation in this back passage, so the pencil of the instrument will draw a straight horizontal line parallel with the atmospheric line, which is termed the exhaust or back pressure line.

7. Before the piston has completed its return stroke the valve has moved to a position where it closes the exhaust port, and the remaining steam is compressed by the returning piston, and the pressure rises and meets the incoming steam, due to the opening lead. At this event the pencil describes a curved line which is called the compression line. This line should blend in with the admission line.

Briefly stated, the indicator shows seven events, as follows:

1. Admission line.
2. Steam line.
3. Point of cut-off.
4. Expansion line.
5. Point of release.
6. Exhaust or back pressure line.
7. Compression line.

If the reader will now commit to memory those events he will be able to picture in his mind an ideal or perfect card where all the events mentioned are performed correctly, and any imperfections or defect in valve setting are instantly noticeable.

Fig. 1 is a card taken from the crank end of a 28x44-inch Corliss engine, running at 96 R. P. M. (revolutions per minute), steam pressure 110 pounds, scale of spring 60 pounds.

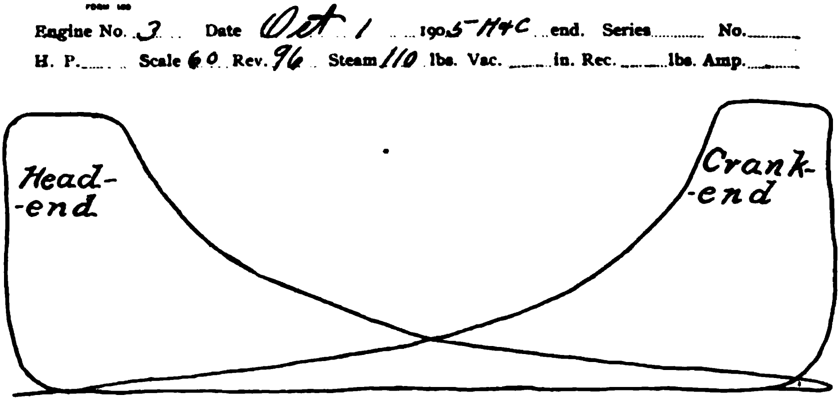
Engine No. 3 Date Oct 1 1905 H+C end. Series .... No. ....
H. P. .... Scale 60 Rev. 96 Steam 110 lbs. Vac. .... in. Rec. .... lbs. Amp. ....

Fig. 1. Card taken from Crank End of 28x44-inch Corliss Engine

This might be considered a near approach to a theoretical or ideal card, but it will be noticed that the expansion line drops lower than the theoretical or perfect line. The rapid falling of the pressure in cylinder, after cut-off occurs, or as shown on card, the drop in expansion line would indicate a leaky exhaust valve, or in a simple slide valve a leak over one edge of exhaust port, or packing rings and piston in such condition as to allow steam to blow through to exhaust side of piston. Very rapid condensation of steam, as would be the case if an engine were exposed to very low temperature without any covering, would produce this defect, which is very wasteful and may easily escape detection by those who have never given the matter any consideration.

When it is desired to test an engine for economy, in a modern power station, all the exhaust steam is allowed to pass into a condenser and all drips from the engine are carefully watched and weighed with the water from such condensation; the result is carefully tabulated and compared with the number of foot pounds of work done, or the output in killowatt hours, if such engine is driving a generator. A consumption of 16 pounds of steam per horse-power per hour is considered a fair average performance for a condensing engine, but, under the most perfect conditions, as low as 10 pounds of steam per horse-power hour has been accomplished.

In the next article we will discuss the first event, the admission line.

JOHN BURNS.

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Questions and Answers on the Pyle National Electric Headlight

By J. Will Johnson

Question 91.—How is the cast-iron washer secured so that it will revolve with the turbine wheel shaft?

Answer.—The cast-iron washer *33* is sustained by a small dowel pin that is made to enter the hub of the turbine wheel, thereby causing the former to revolve with the turbine wheel shaft.

Q. 92.—Do these small dowel pins ever break off?

A.—Yes, quite frequently.

Q. 93.—What is the cause of dowel pins breaking?

A.—Running the equipment with too much end thrust, thereby allowing the washer to move the dowel out of recess; also, maintaining the end thrust too close with insufficient lubricant.

Q. 94.—When this dowel pin breaks what results?

A.—When this small dowel pin in the cast-iron washer is broken off the washer can not revolve with the wheel, but is loose on the shaft, and the hub of the turbine wheel, now chafing the thin back surface of the washer, soon increases the end thrust beyond point desired.

Q. 95.—Then it is quite essential to observe condition of this cast-iron washer and dowel when engine cap is removed for inspection or other work?

A.—It is.

Q. 96.—Should the end thrust be taken up when the equipment is cold?

A.—Yes. The adjustment of end thrust should be made when the equipment is cold, then, when heated up, and expansion takes place, it will not be too tight, if adjusted to 1/32 of an inch.

Q. 97.—Why should the end thrust not be taken up closer than 1/32 of an inch?

A.—If the end thrust was adjusted to a movement less than 1/32 of an inch, when the steam was turned on and the engine and casting heated up, there would be great danger of the engine "binding" between cast-iron washer *33* and flange bushing, and if the engine was not stalled completely it would be slowed down to a speed where it could not do its work satisfactorily.

Q. 98.—Should the end thrust casting with which adjustment of this movement is made become loosened on shaft, what would result?

A.—When facing the dynamo the armature and shaft turn to the right. To take up or decrease the end movement this end thrust casting is moved in the opposite direction. Should the screws that secure this casting to the shaft become loosened, the shaft revolving at a very high rate of speed would tend to run away from the adjustment casting. This casting is a worm screw device, and would move up on the shaft until its own flange and the cast-iron washer in engine would be carried hard against flange of bushings, and the engine would stall.

Q. 99.—How may an engineer locate this trouble instantly?

A.—When the turbine engine is stalled by this casting the steam will blow very hard at the exhaust, and it will be impossible to move armature by hand, as can easily be done at all other times.

Q. 100.—When this occurs what should be done?

A.—Move end thrust casting to the right (when facing the dynamo) until the engine is free, then tighten screws, first being sure to adjust end movement to 1/32 of an inch.

Q. 101.—What precaution may be taken that will tend to prevent the governor plungers from sticking?

A.—If the 3/4-inch plug at top of engine casting is removed each trip before starting and a small amount of coal oil or black oil introduced at this point, when steam is turned on to turbine engine this oil will be blown through the governor stands and around plunger valves, and will cut away any scale that may have started to form, thereby preventing their sticking.

Q. 102.—Is it necessary to introduce oil at this point to lubricate the turbine engine or the plunger valves?

A.—No. As there are no reciprocating parts within this engine, it requires no internal lubrication.

Q. 103.—How many bearings are there within this device?

A.—There are two bearings within this device.

Q. 104.—Where are these bearings located?

A.—One, the shorter bearing, is located in the engine cap casting, and supports the weight of the turbine wheel. The other, and longer, or main bearing, is placed in the box yoke 5, and carries the weight of the armature.

Q. 105.—How are these bearings lubricated?

A.—Each of these bearings is provided with an oil cellar, into which there is a small loose ring suspended around the shaft, a part of the top of each bushing being cut away to allow this "oil ring" to turn on shaft. As the shaft revolves this loose ring is carried around, and, passing through the oil in the oil cellar, carries this oil up to top of shaft, where it passes through the grooves in bushings to the bearing proper.

Q. 106.—Would you use same grade of oil for both bearings?

A.—No; not in all cases.

Q. 107.—What kind of oil should be used in the small bearing in engine cap?

A.—Valve or cylinder oil should always be used in this bearing.

Q. 108.—Why is it essential to use an oil with as heavy body as valve or cylinder oil?

A.—Because of the great heat in the engine cap and the presence of the steam, it would be impracticable to use an oil of a lower flashing point than cylinder oil.

Q. 109.—How often should this bearing be oiled?

A.—This bearing should be oiled just before starting the equipment, or at the beginning of each trip.

Q. 110.—How much oil is required to lubricate this bearing satisfactorily?

A.—Not more than two tablespoonfuls, or just enough oil in the cellar that the loose oil ring may touch.

Q. 111.—What should always be done just before oil is introduced into this cellar?

A.—The drain cock should be opened and the water of condensation that is always found in this cellar drained off, and then it should be *known* that the drain plug is closed tightly before the oil is introduced into the oil cellar.

Q. 112.—What would be the result if this drain cock should be left open?

A.—The oil would pass out instantly, leaving the bearing dry, with the result that the bushing and shaft would be destroyed in short order.

Q. 113.—What grade of oil should be used in the main bearing in box yoke?

A.—Ordinarily the best results would be obtained by the use of black, or engine oil, in this bearing.

Q. 114.—Explain why.

A.—This bearing is always practically cold, and an oil with a heavy body could not pass through the long oil grooves in the bushing, but would drop back into the oil cellar. Particularly is this true in the winter.

Q. 115.—Then it is not safe to use cylinder oil for this bearing?

A.—It is not, except when used in summer, or in the extreme South.

Q. 116.—What trouble will those who persist in using cylinder oil encounter?

A.—They will find that this bushing will have to be renewed quite often.

Q. 117.—How long will this main bushing run without renewal if properly lubricated?

A.—If regularly lubricated with the proper lubricant, this bushing will run at least two years.

Q. 118.—Why do the bearings of this device require so little oil to operate successfully?

A.—For the reason that both the engine and dynamo are perfectly balanced.

Q. 119.—If steam blows at stuffing-box-gland nut *21*, will this not influence the life and usefulness of this bushing to a very great extent?

A.—Yes, if the steam is allowed to blow at this point it will follow along the shaft, blow the oil off that the loose ring had carried up and deposited on bearing, and the bushing and shaft will soon be destroyed.

Q. 120.—What other great damage might be done by steam blowing from this stuffing box?

A.—Part of the oil that had been carried by the oil ring to the top of the shaft would be blown against the armature coils, and in time the insulation on the coils would be destroyed.

Q. 121.—What kind of packing should be used in this stuffing box?

A.—Any soft packing may be used, such as lamp wicking, etc. Never use asbestos.

Q. 122.—How much oil should be introduced in this main bearing?

A.—No more than enough for the loose oil ring to trail in.

Q. 123.—Are the overflow holes in this cellar a gauge to fill the cellar to?

A.—If this cellar should be filled full of oil, the oil ring would throw the oil out at the opening in top of casting. These overflow holes were originally placed in this casting to prevent that. The cellar should not be filled so full of oil that it would run out at overflow holes.

Q. 124.—How often should this main bearing be oiled?

A.—This bearing should be examined each trip, but it is seldom found necessary to oil same more than twice each week.

Q. 125.—When the main bushing becomes badly worn, what may occur?

A.—The weight of armature is carried by this bearing and, since the armature's clearance in the armature chamber is only sufficient to allow for the rotation of the armature, and a reasonable wear of the bushing, if this bushing is not renewed when needed, in time the armature will strike the pole pieces, thereby short-circuiting the dynamo.

Q. 126.—What is the maximum speed at which it is intended that this turbine engine shall run?

A.—The maximum speed of this turbine engine is 1,800 revolutions per minute.

Q. 127.—What is the minimum speed at which it may be run?

A.—To insure a good light at all times, the minimum speed of this engine and dynamo should not be below 1,650 revolutions per minute.

Q. 128.—When starting the equipment in operation, what precaution should be observed, and why?

A.—When it is desired to start the electric headlight, the throttle to steam turbine should be opened slowly in order that the steam may gradually heat the pipes and engine, and also to allow the water of condensation to pass out of pipes and casting.

Q. 129.—Is there not another reason why this device should be started slowly?

A.—Yes, by this method of starting you not only heat up the pipes, etc., but when the water of condensation is carried off, your throttle opening is not too large for the speed at which you may desire to run your dynamo. Otherwise, if the governor valves were in need of attention and the steam was turned on rapidly and the throttle opened wide, as soon as the water was carried out of the pipes and turbine the speed of the dynamo would become so high that damage would be done the copper electrode.

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Questions and Answers on Combustion

By W. L. French

Question 35.—Is there any economy or better steam results secured by "crowding" or over firing an engine that is steaming poorly:

Answer.—No. While it is very natural for a fireman when an engine lags on steam to shovel more coal than the fire can consume, the result is to only make a bad matter worse, by getting a bad fire and causing possible delay to clean it. It is all right to put in an extra amount of coal to determine if that is what the engine needs, but when the fact is once determined that something else is the cause of the engine's not steaming no one but an inexperienced man can be excused for overfeeding the fire. Yet many experienced firemen can not refrain from shoveling in more coal even when their judgment tells them that it is a detriment to the fire.

Q. 36.—Does heavy firing always imply a fuel loss?

A.—No. The work the locomotive is doing may demand the extra amount of coal being fired, which should be proportioned to the work being done and the fuel consuming capacity of the locomotive.

Q. 37.—What would cause deficient air admission through the grates of a firebox where there was plenty of damper space, grate area, and openings to supply the needed amount of oxygen?

A.—Coal fired in large lumps, very fine coal fired so as to cause a bank in the fire, grates covered thickly with ash or cinders, or an ashpan so full as to check the inflow of air through the dampers.

Q. 38.—Why does coal in large lumps interfere with the air admission and good steaming qualities of a boiler?

A.—Because coal must be broken down by heat before combustion takes place, and it is evident that a piece weighing 10 pounds will resist this breaking down much longer than a piece weighing one pound, just as it is easier to fire a small stick than a log. Also, where the large piece of coal lies on the grates no air can enter except around the edges, so that considerable air admission space is thus lost. Where coal is broken properly it gives the best result for air admission and combustion. If there is any doubt of it, try firing with big lumps and watch the pointer on the gauge go back.

Q. 39.—Why does ash and cinder on the grates cause poor combustion?

A.—Where they are allowed to accumulate on the grates oxygen is kept from the fire, and as the fire gets heavier they become packed and quite solid. All firemen have noticed that with a badly clinkered fire air came up only around the edges of the clinker and of the firebox, and when the grates were moved ash was only shaken down at these points, while on top of the big clinkers the condition would be unchanged. The slashbar and dump grate is the only remedy for this kind of a fire.

Q. 40.—Why does a full, or nearly full ashpan injure combustion?

A.—By shutting off the air admission. Ordinarily the back damper will supply all the air needed for combustion, but when the fire becomes heavy or the ashpan filled, both will be needed.

Q. 41.—How often should grates be moved?

A.—This is a matter largely born of practical experience and good judgment. The only loss that can come to the coke of the coal is by being shaken into the ashpan unburned, or by the exhaust tearing the fire and carrying pieces of coke unburned through the tubes. Ordinarily coke waits to be burned, while the gas, like time, waits on no man or fire.

Q. 42.—What are the effects on combustion of a hole in the fire?

A.—An in-rush of air is permitted at that point, which cools the fire and the gases below the igniting point. A loss of heat is a loss of fuel. A hole in the fire is more injurious to combustion than a dead place in the fire that is covered with ash. A fire thick enough to withstand the exhaust, and thin enough so that the light from it shines into the ashpan, may be considered a first-class fire.

Q. 43.—What are the effects of fresh coal on fire?

A.—To cool it. Then the coal commences to break down and give off gas with which the oxygen mixes, and it is consumed. The thinner the coal is scattered the quicker this process takes place. The amount of coal must at all times be proportioned to the work being done. The fireman who keeps a clean, light fire all the way over the road will have steam at all times and with less physical fatigue than the fireman who, to avoid hoeing a pan or cleaning a fire, allows his ashpan to fill up and his fire to become heavy.

Q. 44.—What are the effects of allowing a fire to burn too low?

A.—The gases formed when fresh coal is thrown in will escape unburned on account of the low temperature in the firebox, and a great loss of heat will result, as well as a loss in steam pressure, which is injurious to the firebox and boiler. This practice also spoils a fire.

Q. 45.—What are some of the aids to proper combustion?

A.—The most important aid is a good, observant fireman, for without him all the other aids fail. No matter what devices are adopted and put in use they must be handled intelligently by the man with the shovel to secure success. The fireman alone can keep his fire in good shape, can shovel the right amount of coal at the right time and handle his dampers and grates so as to secure the best results, and he can only do this by study and observation, and application of the knowledge he thus gains to the best advantage. Next to the fireman is the air admission to the firebox.

Q. 46.—How is the air admission hastened?

A.—By the aid of the exhaust steam forced out of the nozzles up the stack. It is evident that natural draft could not supply the amount of air necessary to a fire when an engine is working, so some device must be used to accelerate the air admission to burn sufficient coal to meet the demand.

Q. 47.—How is the exhaust steam made to act as a blast on the fire?

A.—The tips of the nozzles being smaller than the base opening, the steam escapes with a greater or less degree of force, according to the restriction, which must not be so great as to cause back pressure in the cylinders by not allowing the exhaust steam to escape quick enough. The violent rush of the steam up the stack creates a vacuum in the smokebox and, at the same time, draws heavily on the firebox to fill the vacuum thus created, which in turn draws on the atmosphere through the medium of the ashpan and dampers. A coal of a hard nature requires a sharper exhaust than a softer one that is more easily broken down. When different grades of coal are burned in the same locomotive it is plain that the nozzle must be adjusted to burn the harder coal, so that when the softer coal is used there will be a waste of fuel. The harder grades of bituminous coal are of a poorer quality than the softer ones. A diaphragm plate is placed in the front end to deflect the cinders and aid in regulating the draft, and a petticoat pipe is placed over the nozzle standpipe to carry the exhaust straight up the stack, for should it be deflected against one side or the other of the stack the result is to partially destroy the vacuum in the front end and injure the draft.

Q. 48.—What does the degree of heat in a locomotive smokebox indicate?

A.—That there is a great loss of heat which should be utilized to make steam, instead of being wasted, but no means has yet been found that could do this. Modern firebox construction has done much to care for the waste of heat over that of the old style fireboxes, but there is much to be accomplished yet along that line. The velocity of the gases through the tubes tends to cause a loss, as there is no time in their passage through them for the heat to be absorbed.

Q. 49.—How should air be admitted over the grate area?

A.—Equally over the grate surface. If the front-end arrangement is such as to draw air heavily through the grates at one point and lightly or not at all at another, the result is disastrous to combustion.

Q. 50.—What is the draft dependent upon?

A.—The condition of the fire, ashpan, grates and dampers, the size of the nozzles, and the strength of the exhaust, which in turn is dependent on the point of cut-off and the steam admission.

Q. 51.—Is sufficient air admission as necessary to thorough combustion as a sufficient supply of coal on the fire?

A.—It is.

Q. 52.—Is the proper mixing of the air and coal gas important?

A.—Yes. The oxygen must come in contact with the gas to be burned at the right time and place.

Q. 53.—What aid is placed in fireboxes for the mixing of the coal gas and the air?

A.—The brick arch.

Q. 54.—What is it?

A.—A table of firebrick extending across the firebox from side sheet to side sheet, higher in the center than at the sides, and sloping upward toward the rear of the box and extending back from the flue sheet from one-half to two-thirds the distance to the back sheet. There is a circular opening between the front end of the arch and the flue sheet. The size of the arch depends on the style of firebox and the quality of coal used, and often with the ideas of the master mechanic in charge.

Q. 55.—How does the brick arch aid in mixing the gases of the coal and air?

A.—By retarding the escape of the coal gases and throwing them back, giving more time for the mixing of the air with them and for their burning. The arch is also very hot when the engine is working, and it aids in keeping the temperature of the firebox up and in burning the gases.

Q. 56.—Is the arch of any other benefit to the locomotive than this?

A.—Yes. Long after the fire is out the arch, which was red hot when the fire was removed, holds its heat and allows the flues and firebox to cool down slowly and thus tends to keep them from leaking.

Q. 57.—What objections are there to the brick arch?

A.—Where the flues are leaking it is hard to do work on them unless the arch is removed, and often this takes too much time, and where an engine's flues are poor it can not be done every trip.

Q. 58.—How does the interior of the firebox appear when combustion is rapid?

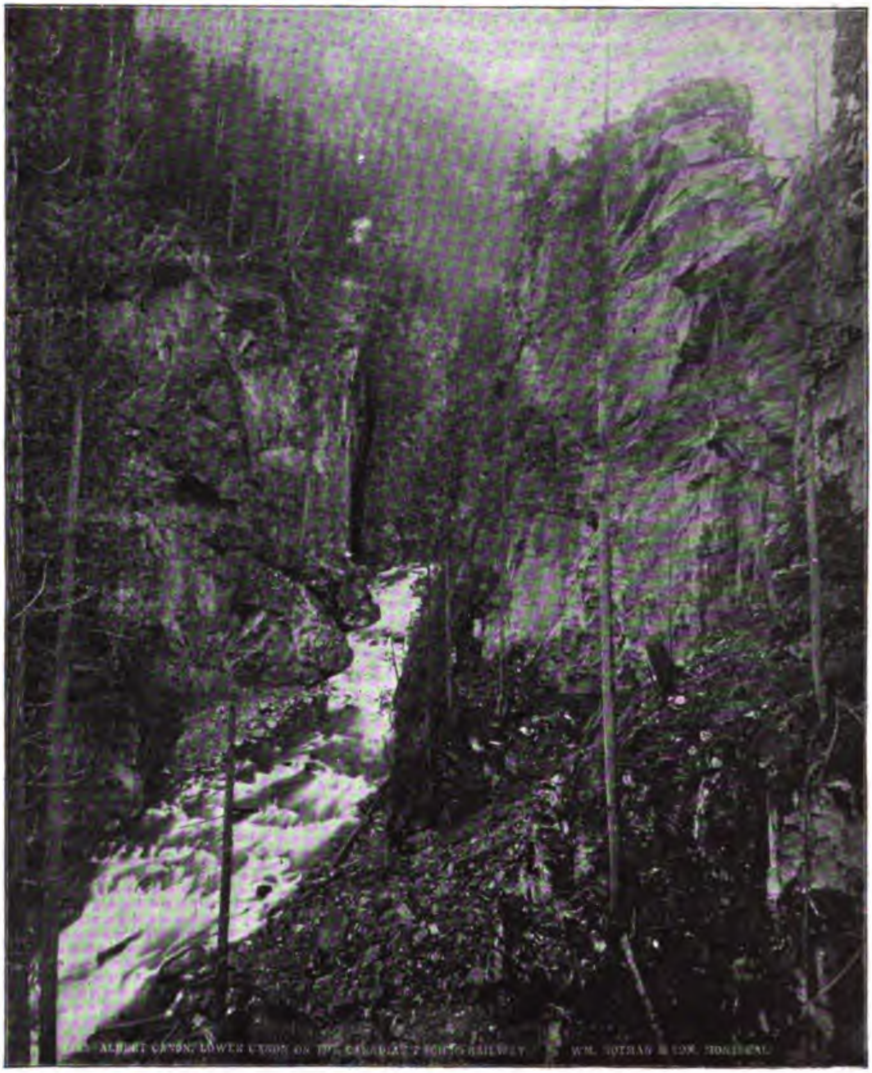
A.—Like a small storm center. The rapid in-rush of the air, the quick formation and burning of the gases, which is really a series of miniature explosions, and the exhaust pulling powerfully on the burning gases, which in their rush to escape are hurled back by the arch to be consumed or escape through the stack, are all the work of an instant. The chemical change of a pound of coal and its equivalent of air is almost too rapid for comprehension, when one considers the amount consumed in a short period of time.

Q. 59.—What effect has a damp atmosphere or too much water on the coal, or combustion?

A.—It retards it, as this moisture must be absorbed and it takes heat to absorb it.

Q. 60.—What is the most important question in connection wth combustion, to railroads?

A.—Economy of fuel consumption. The fuel cost is one of the greatest expenses railroads have to bear in their operation, and it is but natural they should seek relief by using the best appliances available and desiring their intelligent use. There is still much improvement left yet to be desired for some one in the future to attain, before anything like perfect combustion can be secured.


ALBERT CANON, LOWER CANON ON THE CANADIAN PACIFIC RAILWAY
WM. NOTMAN & SON, MONTREAL

ALBERT CANON, ON CANADIAN PACIFIC RAILWAY

Movement of Trains

By H. A. Dalby

Seven Governing Principles Relating to Train Orders.

Under the above title Mr. H. W. Forman has collected some very important facts bearing on the subject indicated, and they should commend themselves to the attention of all concerned in the movement of trains on single track. If properly understood and applied they will assist in the solution of many questions which have been raised from time to time, and which have been answered sometimes in only a partially satisfactory manner. It should be remembered that while it is intended that all rules and train orders be plainly worded so as to express their true meaning, yet it is quite possible for circumstances to arise which may cause some doubt as to how certain trains should be governed, or, in the case of the dispatcher, as to what kind of orders it is best to use. Dispatchers and trainmen should be encouraged in referring to the chief dispatcher, or other proper authority, all questions upon which they are not entirely clear, and when authoritative rulings are sought in this manner it will be well to consider the principles herein set forth in making decisions and giving instructions. We quote in full each principle as set forth by Mr. Forman:

First.—Meet has but one simple meaning. It means *meet* even at the station where a train passes from single to double track. A train is not met until its markers arrive. Unless met, you must not proceed until such train is twelve hours late; or is annulled; or the meeting order is annulled; or an order is received against the train reading "instead of;" or until a new time-table takes effect while waiting showing that there is no such opposing train.

The "meet" order has sometimes been used when it looked as though trainmen would be warranted in disregarding it. It would seem strange for a train about to enter a section of double track to wait to meet a train in the opposite direction, yet if its order reads that way we see nothing else for it to do. The order, however, should have been under Form C, giving the inferior train right over the superior train to that point, so that no question could arise as to the proper procedure. It is also wrong to use the meet order to assist an inferior train to its terminal station, for a strict fulfillment of the order would require the train, together with its engine and crew, to wait until the other train had left the station, or at least had been made up and appeared in the form described or mentioned in the order.

Orders have been issued for a train to meet a work extra at some point and the first named train has been delayed so that it did not reach the station until the work train had tied up. Then the question has been asked whether it could proceed regardless of the work train and the order. The meet order is also wrong in this case. The best kind of an order for such a situation would be the "wait" order, or else the dispatcher should be in a position to annul the meet order and release the train in the proper way. Dispatchers should bear in mind that the meet order should not be used unless it is known that the trains will actually meet, or unless they can annul the order if it becomes necessary in order to save delay.

We have occasionally heard of an inferior train receiving an order to meet a superior train at a certain station and later an order running the superior train late enough so that the other could make the next station and clear the time of the "run late" order. The question has been asked if the inferior train could not disregard the "meet" and make the next siding for the train. To this question the same principle must apply. The word "meet" has but one meaning, and it must be executed unless properly set aside.

When such questions as these come up there is no reasonable or rulable answer that can be given to them. If impossible to obtain instructions from the dispatcher, trains must be governed by Rule 106 and take the safe side, avoiding all risks.

Attention is also called to the clause in regard to making sure of seeing the markers. The complete train has not arrived until its markers are in evidence. For this reason brakemen should be careful, in pulling into the terminal yard, not to remove the markers until within the switches, as some other train may be waiting for them and be delayed in finding out whether the whole train has arrived.

Second.—Trains must be positively identified by the men in charge, except in cases where the circumstances surrounding the movement so postively identify a train that there simply can be no doubt.

Engine numbers ordinarily afford positive identification, but under Rule 94 care must be exercised. Also, in cases where an order is also sent to the operator, his order signal is not at "stop;" but there is a train on the siding at his station and a hand signal to proceed is received. The train on the siding may be one which made that station by time-table authority, and not the one for which you are restricted.

There are cases where a passing train may be safely assumed to be the one expected, as in the case of a passenger train with regular equipment, or a regular freight with every appearance of genuineness; but, even in these cases, due care should be exercised. The freight train *might* be an extra and its white signals be so inconspicuous as to be almost invisible, and *might* have made that station without help against the waiting train. Or, it is even possible that some one may have made a mistake. Such things have happened, and it is well to bear in mind such possibilities. Some roads require a written identification to be exchanged by trains meeting on the road, and it is certainly a safe plan, even though it might occasionally involve a slight delay in slowing down for the purpose. In the case of extras, engine numbers are not always plainly seen at night and sometimes are not very conspicuous in the daytime owing to the fact that the painted figures are old and worn. It is also the practice on some roads to show the numbers in small figures, little care being taken to make them visible at night. Numbers should be painted on the sides and rear of the tank in large figures, and wherever they appear they should be kept fresh and plain, even if the other painted surfaces are neglected. Transparencies on the headlight for showing the number at night should have especial care. Nothing is more important than the number on an engine, and when it is not plainly in evidence it requires extra vigilance on the part of those who have occasion to use it, as well as introducing an element of danger between trains in opposite directions.

Rule 94 is mentioned as a factor which should not be overlooked in meeting expected trains, and it should be remembered that it permits an inferior train, in emergency, to proceed ahead of and to use the rights of a superior train. Of course it is the duty of such train to stop and explain the situation to any trains it may meet before reaching an open telegraph office, but in this, as in some other things, some one may forget, and it is well to exercise caution and good judgment when waiting to meet another train.

If it were not that such a thing had actually happened we should hardly feel warranted in warning trainmen against *assuming* that a train on the siding is the one they are to meet, yet this most inexcusable of all mistakes may well be kept in mind. Never proceed until you are positive you have met the proper train and met it *all* as indicated by the markers.

Third.—Orders are in effect until fulfilled, superseded or annulled. One order never supersedes another, unless the words "instead of" be added. When an order has been superseded it must not be again used. A part of an order may be either superseded or annulled, or one order may in certain particulars qualify another.

Operators must never place on file an order addressed to a train while such train has life, without instructions from the train dispatcher to do so.

If an order is sent for a train to run one hour late, and another order, later, to run one hour and 15 minutes late, the second order does not annul or supersede the first. If the second should be annulled the first is still in effect. Conductors and engineers should not destroy the first order nor should operators take the liberty of filing it away, as it is entirely possible that the second order may be annulled, leaving the first in effect.

If No. 1 is given right over No. 2 to a certain point and afterward a meeting point is made for the two trains at a station within the limits of the first order, it does not annul or supersede the first order. No. 1 continues to be the train of superior direction by virtue of the first order, just as though the time-table authorized it. No. 1 may receive "wait" orders for No. 2 or a "meet" with them and these may subsequently be annulled, but the original order remains good until fulfilled, superseded or annulled in the usual way.

There are cases, however, in which an order may be made of no effect by means of another order, as, for instance, under Form J. If an operator has an order to hold all east bound trains and it is desired to allow No. 2 to pass, it may do so on the receipt of an order reading, "No. 2 may go."

Certain provisions under Form F may act in the same way. For instance, five engines may receive orders to run as five sections of No. 1 and, later, an order may be issued that one of the engines is annulled as 2d No. 1 and that "following sections will change numbers accordingly." The sections which were the 3d, 4th and 5th thereupon become the 2d, 3d and 4th, respectively, although their original order has been neither fulfilled, superseded nor annulled.

These may be termed special forms of supersedure or they may be considered as qualifying the orders which they affect. They remind us that we must allow a somewhat liberal understanding of the meaning of supersedure and that it is possible for an order to so modify one previously issued as to change its meaning or to set it aside entirely, and yet not use the words "instead of".

The last sentence of this paragraph relates to a practice which is more or less common, that of an operator "filing" orders addressed to trains which are still in existence. Usually it is understood between the dispatcher and operator when an order is filed, and while it may be done many times without serious results, yet the fact remains that an operator is required to deliver every order that is sent to him unless he receives another order annulling it, or unless the train to which it is addressed is annulled or becomes twelve hours late. If trouble ever arose on account of it these facts would in all probability be strongly emphasized.

To the principles mentioned in this paragraph might be added another addressed to operators, to the effect that an order is not in effect until it has been repeated and made "complete" by the dispatcher. It may seem unnecessary to make this assertion, and it would be were it not that operators have been known to write "complete" on orders before receiving it from the dispatcher, and at least one case is on record where he evidently forgot that he had done this and delivered the order to the train addressed, and a collision was narrowly averted. When accidents happen as the result of gross violation of the rules, such as this, there is seldom any leniency shown toward the one who is responsible, nor can he reasonably hope for it.

Fourth.—Extra trains lose right when the last named station in their running orders is reached, and they must there pull into siding at the initial switch. A regular train, or sections, receiving orders to run only to an intermediate station, there lose precedence and must pull into siding at the initial switch. Orders held by such extras or regular trains thereupon become void and must not again be used. Orders are fulfilled when a train running under them reaches the end of its then authorized run, or reaches a division terminal. Orders held by work extras become void when their working orders expire. Helper engines lose all authority to run and all their orders become void when they detach from the train they help, unless they hold separate orders authorizing them to run as another train after performing helper service.

It is not necessary to receive the annulment of a train but once.

The first sentence of this paragraph expresses a principle that is perhaps not fully understood. If an engine has orders to run extra to a certain station it has no right to the main track *at* that station (unless it is a yard and is governed by yard rules). If a work extra has orders to work between certain stations it can not use the main track at either of those stations unless (as mentioned) it be an authorized yard.

The second sentence refers to an order given under Form F, in cases where signals are ordered to be displayed over only a part of the territory covered by the schedule. Such orders have caused many questions to be asked in regard to how the trains should be governed after arriving at the last named station, whether any of them could proceed beyond that station, using the schedule alone. It seems to be generally understood that an order reading "Engine 20 will display signals and run as 1st No. 1 London to Paris," will permit the regular No. 1 to proceed as No. 1 from Paris to the terminal station, the train which was temporarily created as 1st No. 1 being required to take the siding at Paris, its order having been fulfilled. Similarly, an order reading "No. 1 will display signals London to Paris for engine 20," would permit the regular train, which is temporarily made the first section, to proceed as No. 1 from Paris, the following section considering its order fulfilled on its arrival at Paris. Both these orders should be addressed to "No. 1 and Engine 20." When so addressed the regular No. 1 is recognized as such by the train order, and this gives it the authority to proceed over the entire limits of its schedule, either as No. 1 or a section of that number. While the Standard Code is not explicit in this matter, yet the above understanding is sanctioned by the American Railway Association and is probably accepted on almost every road.

If the order reads, "Engines 70, 85 and 90 will run as 1st, 2d and 3d No. 1 London to Dover," supposing Dover to be an intermediate station, all the sections would consider the order fulfilled on arrival, [illegible] would not proceed farther without more orders. This order should be addressed to Engines 70, 85 and 90.

The third sentence refers to orders concerning other trains which the train may have held, and states the principle that when a train's running orders are fulfilled the train is entirely off the road, so to speak, and must consider itself without any orders, the same as though it had not left its initial point. The same principle applies to work trains after their working orders expire. One exception is made to this statement in the last sentence of the paragraph. An annulment order may be used after new running orders are obtained, for the reason that when a schedule has been annulled it can not be restored, but all other orders should be regarded as dead when a train fulfills its running order. This question has been brought out most forcibly on districts where it is the custom to give running orders for extras over part of the district only, giving another order to complete the run. This is done to facilitate the work of the dispatcher, as it requires meeting points between extras only on the limited territory concerned. After receiving further running orders it may perhaps seem strange to require another copy of a "run late" order or of a "superior extra," having been using the same order before, and of course the proper officer can rule otherwise if he so desires. For a general rule, however, capable of application in all cases, the above seems to be the only safe one.

Fifth.—Run-late, or time-orders, make the trains inferior only within the time-limits named, and the same orders confer right upon other trains to which such orders are addressed, while within such limits, but not beyond.

All "run-late" or "wait" orders must be cleared as many minutes as the train would have been cleared if it had been running on time.

If No. 1 is ordered to run two hours late from A to C and one hour and 40 minutes late C to E, it has been asked if an opposing extra, for instance, may not be governed by the fact that No. 1 can not arrive at C before it is two hours late, thus giving the extra considerably more than one hour and 40 minutes on its time to make C. The answer is given in this paragraph. The extra and all other inferior trains must be governed strictly by the terms of the order. The reason for this is plain when it is remembered that there is nothing to prevent the dispatcher from starting a train as No. 1 from C before the arrival of the train that is running on that schedule from A to C. It is not necessary for the train that leaves A as No. 1 to run through to Z on that schedule. It can be stopped at any station and another train may be ordered to fill the schedule from that point. The manner in which regular trains acquire authority to use a schedule and the privilege of the dispatcher in taking away that authority constitutes the sixth principle, and is important to keep in mind.

Sixth.—Trains may be created at their initial station by a clearance card or a train order, or both; but at all other stations they must be created by train order. When a schedule is given a train, by clearance card or otherwise, it retains that schedule between the stations designated, or, in absence of designation, to the end of its run, unless taken away from it by train order.

Seventh.—Orders not in proper form and which are not clear, if accepted, must be understood to have no further effect than as holding orders. Observe Rule 106 in such cases, and do not run against a train when there can be any doubt whatever as to your rights.

The seventh principle is one that is as old as railroading itself. If there is any doubt about the meaning of an order, first see if it is according to prescribed forms. If it is, the book of rules should explain it. If it is not, ask the proper authority for an explanation, meanwhile being sure to "take the safe side." If it is not according to a prescribed form it has no authorized meaning at all, and unless its terms are plain beyond all shadow of a doubt no conductor or engineer should be censured for refusing it. It is expected that the prescribed forms will be used and it is the intention that they be explained in the rules. If they are not so explained, ask for an explanation. If you do not get it, take the safe course and run no risk.

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Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

347. Tractive Power of a Locomotive.—"Would there be any difference in the power of an engine by increasing the length of the stroke one inch, thereby increasing the leverage and diminishing the cylinder diameter a corresponding amount so as to leave the number of cubic inches in the cylinder the same, or vice versa? The cylinder dimensions are 22x26 inches, driving wheels 76 inches in diameter, and M. E. P. 175 pounds."—*W. O. Y.*

Answer.—The formula $\frac{C^2 \times S \times P}{D} = T$ is usually employed to determine the tractive power of a locomotive, and the object of this department is to furnish information if possible that will enable the readers to solve problems of this nature. Would suggest that you figure this out. The practice will be beneficial.

348. Length of Main Rod.—"What is the correct way to determine the length of a main rod?"—*W. O. Y.*

Answer.—If guides and cross-head are up and main driving box set properly in jaw, place the cross-head in exact center of guides and use a square, measuring from center of main driving box. When adjusting a main rod to the proper length you should always notice whether the key in the back end is in front of or behind the crank pin. When in front, you lengthen the rod as the brass wears and the key is driven down, and when behind the crank pin the rod is shortened. Divide your clearance accordingly and always consider the space occupied by the piston rod in the back end of the cylinder, which should have 1-32-inch more clearance than the front end to equalize the exhaust. Therefore to get the correct length of a main rod, place the cross-head 1-32-inch ahead of center of travel and measure to center of the axle and you have it.

349. Engine Drifting, With Reverse Lever in Center of Quadrant.—"While engine is drifting with reverse lever in the center notch of the quadrant do the rocker arms stand perfectly still, or do they move forward and back a small amount? Explain in detail."—*W. O. Y.*

Answer.—You understand that the lead is increased as the lever is hooked up toward the center of the quadrant. Lead is the opening of the steam port when the piston is at the beginning of its stroke. Now, in order to get any opening of the steam port, the valve must first travel a distance equal to the lap. Therefore the valve and rocker arm would have to travel a distance of twice the lap plus twice the lead with lever in center notch while drifting.

350. Right Go-Ahead Eccentric Slipped.—"If the go-ahead eccentric on the right side is slipped, by following these directions will it be properly set. By placing the engine on top quarter and putting the reverse lever in extreme forward corner, then take out bolt on top of link clevis, put reverse lever in back corner, and drive eccentric back so as to put in bolt?"—*G. W. M.*

Answer.—This method is not accurate enough to recommend your wasting any time trying to prove it. Why not place engine on forward center with lever in full gear forward and move eccentric until steam shows at front cylinder cock? This will require less time and there is no chance for a mistake. In case you want to set the eccentric by the position of the link, place engine on forward center, hook reverse lever in the center notch, then tie a nut to a piece of string and fasten it to the eccentric-rod bolt at the top of the link, and move the eccentric on the axle until the string is plumb with both the eccentric-rod bolts. This will be more satisfactory than the directions given in the question.

351. Piston Travel.—"Is the distance from the center of the rod pin to the center of the axle half of the piston travel?"—*G. W. M.*

Answer.—Correct—always.

352. Cross-head Travel and Main Rod Angularity.—"Does the cross-head travel farther when the main pin travels from one center to the quarter, than it does when the pin travels from that quarter to the opposite center?"—*F. N. A.*

Answer.—If you will take a compass and make a circle to represent the crank-pin circle, then draw a straight line through its center, extending the horizontal line a sufficient distance to represent the length of the main rod, then extend the compass points in proportion to the length of the main rod and describe an arc through the center of the crank-pin circle, you will find that the arc thus described will intersect the crank-pin circle in front of a vertical line drawn through the center of the crank-pin circle. The shorter the main rod the greater the distance will be from the vertical line. Now, if you mean when the main pin is on the quarter, that is, with the center of main pin and center of axle in a vertical line, the cross-head will travel farther from that quarter to forward center and back to the same vertical position than it would if the pin moved from the quarter to the back center and back to quarter. Look up the angularity of the main rod and it will help to make this clear to you.

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The Westinghouse Air Brake.

Answers by F. B. Farmer.

243. Emergency Application from Unknown Cause.—"The other day we coupled onto a train of about 63 cars in the yard and pumped the train line and main reservoir to standard pressures, started to pull out of yard, went O. K. for about three-quarters of a mile and all at once the brakes went on in full emergency without the engineer making any reduction in train line. The conductor said there was no angle cock opened. The brakes pumped off and we started again. The brakeman was on the engine, so there was no angle cock opened in the middle of the train to cause this reduction. The rest of the trip was O. K. Please inform if any defect in the braking system would cause this."—*J. W. F.*

Answer.—So far as the writer has ever been able to learn there is no authentic case where the brakes suddenly applied in emergency, as in the case you describe, without a sudden reduction in train-pipe pressure having been made by reason of an angle cock being opened or the conductor's valve being used, and there is nothing in the information given that would lead to a different conclusion. Hence, the natural inference is that the party who caused the sudden reduction was disinclined to make known the fact owing to the undesirable results that followed.

Theorizing on the possible but improbable, it might be suggested that if the train had been considerably overcharged before starting and the brake valve then returned to running position, rather rapid subsequent train-pipe leakage, which would be unsupplied until the train-pipe pressure had fallen below the adjustment of the feed valve, and the presence in the train of a triple valve so defective as to apply quick action in the service reduction, might result as described. The writer has never heard of such a case, it does not seem probable, and the satisfactory operation of the brakes for the rest of the trip practically demonstrates that this condition did not exist.

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244. Tank Brake Stuck.—"Engine 2318 had a tank brake that stuck. You could bleed it, but it would not release. The only way to get it off was to remove the plug in brake cylinder. Why would it not release when bled off?"—*J. W. F.*

Answer.—Without further information the presumption is that it was either one of the old style plain triple valves with a four-way cock, which was turned to cut-out position before the attempt was made to release the brake, or else the triple valve piston had an exceedingly leaky packing ring and the release valve or bleeder did not have a sufficient opening to reduce the auxiliary reservoir pressure rapidly.

When the old style, plain engine triple valve is cut-out at the four-way cock the brake cylinder is cut off from communication with the rest of the brake apparatus and the pressure can then be let out of the cylinder alone by making a direct opening from it, as by removing the plug. With such valves the brake should invariably be released before being cut-out, where this latter operation is necessary.

The other suggested cause is not probable, but is possible. The writer once saw a tender brake that at times acted as described. In this case the brake was fitted with a retaining valve and the trouble was found to be a piece of cork which could not pass the ell near the triple valve. At times it would entirely block the pipe and at others would allow the brake to release, but slower than usual. Even in this case the plug need not have been taken from the brake cylinder. If the engineer had closed the angle cock back of the tender, emptied the train pipe and then bled all air from the auxiliary reservoir the brake would have released.

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Train Rules and Train Practice.

Answers by H. A. Dalby.

186. Extending Work-Train Limits.—"We received the following order some time ago. 'Engine 888 will work 6:30 a. m. until 8:00 p. m. between A and B and protect against special 60 west after 12:15 p. m.' Upon arrival at B we received the following: 'Limits in order No. 7 are extended west to C.' When we were through unloading ballast it was 12:10 p. m. and we could not make it back to B. The conductor argued that we did not have to protect west of B, and I argued we did. B is a registering station. Which is right?"—*H. P.*

Answer.—The second order is not according to any Standard Code form nor according to any book of rules of which we know. If it is not according to a prescribed form it does not mean anything, and trainmen would, in our opinion, be justified in refusing to run on it. If it is according to a prescribed form the rules should explain what it means, or if they do not, the trainmaster or other proper authority should give the needful instruction.

We have known some dispatchers to use the form, however, and suppose it is intended to mean that the station limits are changed and that all other orders the work train may hold continue in effect on the new limits. At any rate, if we were on the work extra we should continue to protect against special 60 west as a matter of safety, if nothing else. Then we should ask the proper officer how such an order is to be understood.

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187. A Specified Movement.—"Under the Standard Code of Train Rules what is a 'specified movement'? Our rules state that a train order should preferably contain but two specified movements and that an order containing more than one specified movement must not be superseded. Would an order to run extra from A to C and return to A be two specified movements? If a meet was made in the above order at B would it be three movements?"—*C. W. R.*

Answer.—The phrase "specified movement" and the restrictions in regard to it were stricken from the Standard Code about ten years ago, though it is possible that they still appear in some books of rules. The understanding of a "specified movement" seemed to be some particular instruction which was complete in itself and could be considered independent of other instructions, as, for instance, a meeting point, an order to pass another train, an order to run late or for an engine to run extra. The idea seemed to be that an order should preferably contain but one such movement, and that if it should contain more than one, it was unsafe to allow one movement to be superseded while the other remained in effect. The fact that the instructions in one order could be separated so that part *could* be superseded while the other part remained unaffected would indicate the meaning of the words. Now, if an engine had an order to run extra from A to C and return to A, the construction of the order is such as to admit of a division such as has been indicated, that is, the instruction to run extra from C to A could be considered apart from that directing it to run from A to C. We should therefore conclude that each trip might be considered a "specified movement."

The idea was that it was dangerous for a conductor or engineer to hold an order a part of which was in effect and the other part not, and as the above order is capable of such a division it would seem that it contained two specified movements, and if a meeting order were included it would make three.

Ideas are now much more liberal in this regard, and, generally speaking, there are no restrictions placed on the number of movements in a single order, and any part may be superseded or annulled without affecting the remainder.

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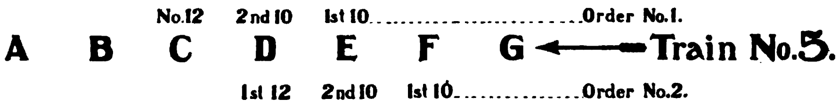
188. A Matter of Caution.—"Please give your opinion as to the way No. 5 should be governed in the following orders with regard to 2d No. 12:

"Order No. 1.—To C. and E. No. 5 at G: No. 5 will meet 1st No. 10 at E, 2d No. 10 at D and No. 12 at C.

"Order No. 2.—To C. and E. No. 5 at G: No. 5 will meet 1st No. 10 at F instead of E, 2nd No. 10 at E instead of D, and 1st No. 12 at D instead of C.

"Order No. 3.—To C. and E. No. 5 at G: Order No. 2 is annulled.

"The following diagram will help to understand the situation:



"Our rules say that a part of an order can be superseded. Does not that mean a paragraph and not a half of a whole movement?

"According to these orders No. 5 must remain at G for 1st and 2d 10 and 1st 12. According to the opinion of some No. 5 can go to D for 2d 12, but I think if No. 5 remains at G for 1st 12 it must stay there for all sections of No. 12, because order No. 1 was superseded by order No. 2, and order No. 2 is annulled.

"I claim that there might be only one No. 12 when order No, 1 was given (No, 12 starts from A), but that signals might be put on them at B. I consider that when a dispatcher does this he is setting the schedule aside and taking the responsibility on himself unnecessarily."—*M. C. W.*

Answer.—The first opinion we should express in regard to these orders is that it is extremely unwise, not to say unsafe, to issue them. Of course, when "No. 12" is mentioned it means all sections of No. 12, but we consider that when the words "instead of" are used in an order that the train to which they refer should bear the same designation that it did in the previous order. To say that "No. 5 will meet No. 12 at C" and afterward say that "No. 5 will meet '1st No. 12' at D instead of C" without mentioning 2d No. 12, naturally leaves a doubt as to what is intended in regard to the second section. No meeting point has previously been made with 2d No. 12 except as it was included in the general mention of "No. 12". The rules require that when there are sections each one shall be specified in train orders. If the dispatcher found by the time that he put out order No. 2 that there were to be two sections of No. 12 he should have made a meeting point for the second section as well as the first. If we adopt the argument that order No. 2 does not change the meeting point with 2d No. 12 (which is at C), order No. 3 annuls all meeting points with the first section and still leaves the meeting point at C for the second section. While this may be technically correct, we repeat our former statement that it is not a proper form to use, for the reason that order No. 1 did not mention 1st and 2d No. 12, but only "No. 12." Order No. 2, therefore, in changing the meeting point gave a different name to the train (1st No. 12) from what it was called in order No. 1.

It is possible that some authorities might hold the opinion that No. 5 could go to C to meet 2d 12, but, speaking as a dispatcher, we should not give such orders, lest they might be misunderstood. If we were running No. 5 we should want an order specifying a meeting point with the second section, or at least some evidence from the proper authority that 2d 12 understood to wait for us at C.

With regard to superseding part of an order, the intention is that any one movement, that is, any meeting point or any particular instruction in regard to another train, may be changed without affecting the rest of the order. In this case we think the proper use of the words "instead of" is a little bit overstepped when it comes to splitting up a meeting point which has been made with "No. 12" by saying that No. 5 will meet 1st No. 12 at D instead of C and saying nothing about the second section. Unless men have had definite instructions (and evidently these men have not) they are just as liable to consider that where No. 5 meets the first section it must also meet the second as to understand it otherwise, and the same would be true of the men on the opposing train.

Our advice to dispatchers would be to avoid the use of such orders. To conductors and enginemen we would say, be governed by Rule 106 and take the safe side. Refer the matter to your superior officer, and if he sanctions the use of orders like the above, ask for instructions as to how they should be understood.

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Railway Club Proceedings

*Hydrostatic Tests of Locomotive Boilers.**

"Is it necessary or desirable to give a locomotive boiler Hydrostatic Test? If so, should it be greater than the allowed steam pressure?"

There has been a great deal written on this subject by the Government and insurance companies. A great number of these writings are trying to make a distinction between inspection and hydrostatic test of boilers. The subject can not be divided, as an inspection without a test would not give sufficient evidence that the boiler was substantial to carry the pressure assigned to it; hydrostatic test without inspection would be useless, consequently it will be necessary to consider inspection and hydrostatic test together.

The object of hydrostatic test is to ascertain if the boiler is capable of sustaining some given pressure, and also to test the joints as well as the quality of workmanship.

The only means we have of ascertaining with any degree of certainty the safety of a boiler is by the application of pressure, which should be under conditions as similar as practicable to those of actual work. Let a boiler be ever so carefully designed and constructed according to the best knowledge acquired by careful research and long experience in the strength and disposition of its materials, and let every plate be tested before it is put in, there will still remain an element of doubt as to the actual strength of the boiler, since the material may have sustained injuries in the process of construction which may have escaped detection. In the case of a new boiler, even by a first-class maker, to say nothing of original and hidden flaws in the plates, bars, angle irons and castings, there is always a possibility of defects such as bad welding, careless riveting, plates burnt in flanging or cracked in bending, and many other defects that may be traced to the want of skill or reckless negligence on the part of the workman.

Many cases of dangerous defects which the strictest scrutiny of the completed boiler would fail to detect, have been brought to light by the hydrostatic test combined with careful inspection. The following may be given as examples: In a new boiler the rivet holes in some of the shell plates, instead of being about 13-16 inch in diameter, were discovered to have been repunched and made 1 inch by 13-16 inch in order to get the ¾-inch rivets through the holes in the adjoining plate. The section of the adjoining plates through the line of rivets was thereby reduced 14 or 15 per cent. more than necessary, and the strength was further diminished by the presence of incipient fractures produced by the reckless use of the drift. The difficulty, or rather impossibility, of keeping the joint tight in testing by hydrostatic pressure led to the discovery of these defects, which were certainly dangerous.

In another case, the gusset plates of a boiler were found to be put in between the double-angle irons on ends, with the material between the holes and the edge of the plate nearly cut away. Such a defect would not be apparent to the eye, being completely concealed, nor to the ear if tested by sound, yet its presence was revealed by the bulging of the plates on testing the boiler with water pressure.

These two cases indicate the possible unreliability of the mere internal inspection of a finished boiler, and show that boilers should always be carefully inspected during construction, as well as when completed and ready for work.

The locomotive boiler does not admit of anything like proper examination. The expense of removing the tubes alone would forbid a periodical examination of the shell of the boiler, and the water spaces around firebox are almost entirely out of sight, consequently a thorough examination is out of the question. In all cases there is only one means of testing the strength of the boiler, and that is —the application of pressure.

We would not consider it practicable to allow a boiler to go through any of our shops for general repairs without having a hydrostatic test; this test to be applied before the boiler is covered so that any defects that may be found through said test may be properly taken care of.

When we consider that a locomotive boiler is constructed with a factor of safety of between 4 and 5, it would be impor sible to injure the boiler in any way testing it at a pressure of 25 or even 50 per cent. above its rated working pressure.

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*Paper by George Wagstaff, presented at the meeting of September 8, 1905.

The laws of the State of Massachusetts on inspection and testing locomotive boilers give the following, adopted June 1, 1901, by the Board of Railroad Commissioners, under the provisions of Chapter 111, Section 218, Revised Laws:

1. All boilers for locomotives before going into service must be subjected to a hydraulic pressure of not less than 25 pounds per square inch in excess of the maximum amount to be carried when in service, and in no case less than 150 pounds per square inch.

2. The water must be heated to near the boiling point.

3. This test must be repeated at least once a year.

4. The superintendent of motive power, master mechanic or some other proper agent of the company will attend in person. He will remain outside while an assistant will examine the firebox from the inside.

5. A record of all tests must be made, giving dates and anything worthy of mention, and a report of the same must be made to the board on or before the first day of February annually, covering the preceding calendar year.

6. Special examinations of the stay-bolts of locomotives in service must be made not less frequently than once in three months.

7. When these examinations are made, all the water must be drawn from the boiler, so that the vibration of the sheet may indicate any unsoundness of the stay-bolt when it is struck with a hammer. When stay-bolts are drilled this test may be omitted.

8. All stay-bolts applied after this date, with the exception of crown sheet bolts and bolts behind frames, must be drilled from the outside one and one-fourth of an inch deep and three-sixteenths of an inch in diameter.

9. No locomotive shall continue in service with a broken stay-bolt in the top row, or with two or more broken bolts contiguous in any part of the firebox.

10. Steam gauges must be tested immediately before hydraulic pressure is applied, and must be tested at least once in three months thereafter.

11. These regulations supersede all regulations heretofore made by the board.

The Hartford Steam Boiler Inspection and Insurance Company, which is one of the largest and most reliable insurance companies, has been asked the following questions:

Q. 1. Is it necessary or desirable to give locomotive boilers a hydrostatic test?

A. 1. Since so little of a locomotive can be examined, we regard a test as necessary, although it may be made by expanding the water in the boiler to the degree that would be required, or by hydrostatic pressure, as may be thought best or is most available.

Q. 2. If so, should it be greater than the allowable steam pressure?

A. 2. We think it should. The tendencies of test, which under certain circumstances have been usually 50 per cent. in excess of the safe steam pressure that may be found by calculation, is often increased to a proof pressure of 100 per cent. in excess of the steam pressure; but the test in any case should be well within the elastic limit of the material.

From the large percentage of dangerous defects found each year by this company, it would seem as though a periodical test is very necessary indeed. Attached you will find interesting data on the Hartford Insurance Company's work.

That the hydrostatic test is a very convenient method of testing the tightness of the work on a new boiler can not be gainsaid, and hence its almost universal adoption, in conjunction with inspection to a greater or lesser degree, in the passing of new work. As a detector of leakages it has at least no rival, and its application enables faulty caulking to be made good before the boiler has left the works, and before a leak has time to enter on its insidious career of corrosion. It will be evident that if the test be applied with this object to a new boiler, the pressure should range to some point in excess of the working load if such a test is to be of any practical value.

The pages of the foregoing paper have dealt very largely with the testing of new work. To impress upon the minds of the readers that if such stringent means must be taken to insure a good substantial boiler, they ought to be willing to confess that it is necessary to repeat this operation at least once each year. as a locomotive boiler, like ourselves, does not get any younger, but older and consequently weaker.

The writer has not had time to give this matter as much thoughtful consideration as it deserves, but from facts above stated the following conclusion should be drawn: That a periodical test at a pressure of at least 25 per cent. above the working load would be necessary and practicable.—Central Railway Club.

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*Block Signals and Other Safety Appliances Used on Different Railroads.**

MR. DAVIS: Mr. President, and members of the St. Louis Railway Club:

I promised to prepare a paper for this meeting on the subject announced, and regret exceedingly to have to say that I have not prepared such a paper.

The Vandalia Line, as you all know, is the small end of a funnel through which the Pennsylvania System pours its traffic into St. Louis. If you stop to consider what this means, during the recent past, you can have an idea of how much time any of the staff officers have had in which to prepare papers.

Nevertheless, my intentions were good; it is only in the last moment that I have given up the idea. I therefore feel that you will forgive me for substituting a few remarks regarding the different methods of signaling as I remember them, at the time I made investigations; and telling you a story of the Vandalia Line, which I think will interest you for the reason that it shows what block signaling will do for a single track railroad.

About two and a half years ago when freight traffic was very heavy on all the lines in this part of the country we had our share of the business. We were trying to handle on certain portions of the division as many as seventy trains a day, especially is that true of the eastern subdivision between Indianapolis and Terre Haute, seventy-three miles, where we have the Brazil and the Seelyville coal districts, where the traffic is always pretty heavy.

We handled that business for awhile, but it was a little bit on the order of the man who could lift a cow over a fence, for the reason that he had performed the feat daily ever since the cow was a calf. We had worked into the business so gradually that we did not actually realize what a remarkable feat we were performing until our superintendent, Mr. W. C. Downing, began to make comparisons, and found that we were actually handling as much traffic as certain double track lines west of Pittsburgh. At the same time we did not have one inch of double track, not even through the yard at Indianapolis or Terre Haute or Effingham, or East St. Louis. It was a single track railroad pure and simple.

All of a sudden, hardships began to rain on us thick and fast. The good luck with which the Vandalia Line is credited, seemed to have left us entirely; our oldest and best conductors and enginemen forgot their orders and overlooked trains of superior right, and with very disastrous results. In one case an operator failed to deliver an order and caused one of the greatest disasters the Vandalia Line has ever seen in the way of a collision.

For twelve consecutive months we made an average of one collision in about every twenty days. After that year had passed, it seemed that the entire world had turned right square against us. Everything that we tried to do failed. Our enginemen seemed to be afraid to run, and the trainmen seemed to be overcautious in everything they did. Our passenger trains lost time from the moment they started out until they came in, causing delays without number to trains of lesser importance, and those in turn delaying trains of still lesser importance. Our engine failures were numerous, and the mechanical department said that the failures were caused principally by the long number of hours that the trains were spending in side tracks; that an engine would leave the house in comparatively good shape, and before she reached the end of her run she was again a candidate for the shop. And on the other hand we said, if the engines are given to us in good condition, we would move the traffic. Positive statements from either side of the fence did not improve matters a bit; we kept getting worse and worse until the sidetracks and yards were congested to such an extent that there was very little room left for the meeting and passing of trains.

Our train dispatchers became discouraged because they were unable to keep up with their work. Mr. H. I. Miller, who is now general manager of the Rock Island System, was then our general manager. He and Mr. Downing, our superintendent, got together and held conference after conference, and they brought one thing I remember, and that was that we were working a single track railroad beyond its capacity, with the usual results.

They finally decided that they would at least put an end to the collisions, and I was very much gratified that I was honored by being chosen as the proper person to investigate the different methods of signaling throughout the country and to advise them of the method which was in my opinion best suited to the needs of the Vandalia Line.

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*By Mr. John L. Davis, Division Operator and Chief Train Dispatcher, Vandalia Line.

I commenced my investigations by going to the Chicago and Alton. I found that they had between Chicago and Bloomington at that time automatic semaphore signals to protect trains in both directions; the signals were operated on the normal danger plan, and were spaced anywhere from four thousand to seventeen thousand feet; on curves they were staggered, at points where the view of the block signal was obstructed, a distant signal was placed in advance. At all main track switches they used an annunciator in the form of an alarm bell. When a train approaching from either direction reaches a point one thousand feet beyond the first block signal, it will ring, and continue to ring until the train has passed the switch. Any one within hearing of the bell understands that the switch is not to be opened. Everybody connected with the property understands that. Their main track switches are all wired so that if a car moves out far enough to foul the main track, or if the switch points stand open as much as a quarter of an inch, the first block signal in either direction will indicate danger.

On this side of Bloomington they were working signals on the normal clear plan; they were located about fifteen feet from the block section so that the engineman could see the change from clear to danger, as he entered the block.

If the signal failed to work properly the engineman was to accept it as a danger signal. A broken wire or a broken rail or a train ahead in the block would cause the signal to indicate danger.

On all passenger trains they carry a speeder, which is used only for the purpose of flagging. When they find a signal at danger, the flagman is immediately sent ahead five minutes before the departure of the train; then it proceeds at a rate of speed not greater than fifteen miles an hour and continues in that way until a clear signal is found. They use hollow iron masts for their semaphore signals and the up and down rods are on the inside. The signals were made and erected by the Hall Signal Company, and are a credit to the company as well as to nearly any railroad.

On the Queen and Crescent a man can find pretty nearly everything he wants in the way of automatic signals to protect trains against following and opposing movements on a single track. They have the semaphore signal, the disc signal, the banner or clock work signal, the shutter signal and two or three other kinds, all working very nicely. One thing of particular interest to me on the Queen and Crescent was the English staff system in use between Cincinnati and Ludlow yards and over the Ohio River bridge, and on three other short blocks.

The staff machine resembles slightly a slot weighing machine; there must be one of those machines at either end of the block. They are connected electrically, and considerable machinery is moved whenever a staff is taken out or put into one of them. The staff is a steel pipe, 22 inches long, encircled with brass rings, at either end of it is stamped the names of the stations which bound the block. The staff serves two purposes; first, it is a key to unlock the levers which operate the signals; second, the possession of the staff gives to the train the absolute right of track over all other trains through the block. If the train consists of an engine only, the undivided staff is given to the engineman. If there is a conductor on the train the staff is divided; one portion is given to the engineman and the other portion is given to the conductor. They carry it through the block and deliver it to the operator at the other end. He immediately unites the two pieces by screwing them together and inserts it in his staff. The operators communicate with each other by a code of bell signals and in addition to that there is an indicator on each of the machines which shows whether or not a staff is missing. There is also a permissive system in connection with this method; it is performed by the use of what is called tablets; each tablet resembles an iron washer about three inches in diameter, and the mechanism of the machines is of such a nature as to make it impossible to use tablets on trains other than those running in the same direction as the one which has possession of the staff. This method of signaling seems to be safe, but unfortunately quite a reduction in speed is necessary in order to handle the staff properly.

Referring again to their electric signals, the installation is very similar to that of the Chicago and Alton. In fact the work of installation was supervised by the same signal engineer, Mr. B. H. Mann.

They use the C. & A. bell indicator, at all main track switches and use the C.

& A. method of flagging. Now and then the flagmen will meet on their speeders, shake hands and compare orders, and find that some one has made a pretty serious error. The officers of the company are of the opinion that the automatic signals have saved for their company many times their cost by the prevention of collisions.

The Chicago, Milwaukee and St. Paul uses, between Chicago and Milwaukee, on the double track, the Rowell-Potter semaphore signals; on the Dubuque Division they use a semaphore signal of the Union Switch and Signal Company pattern. On all single track divisions, they use the manual block system to protect trains against following and opposing movement.

There is an interesting method of blocking over the Mississippi river bridge between Savannah and Sabula; it is a combination of both automatic and manual.

All high speed routes through interlocking plants are electrically locked, so when they are once set up, the route can not be changed very well.

There is a hand release a short distance from the tower, but it takes the man a moment or two to go to it, and this requires some little time to turn it until the levers are released. The hand release is there, to be sure, so that the man may change the route in case the train for which it is lined up does not arrive when expected. Then, again, they have changed the method of signaling slightly from the interlocking plan, by blinding the lower light on the home signal, so that it appears only when the route is diverging. That is done to do away with running the enginemen up against a red light, when the route is clear. (Applause.)

The Philadelphia and Reading uses Hall disc signals throughout; they are operated on the normal danger plan, and are spaced anywhere from a mile to a mile and a quarter, excepting in dangerous places, where they are closer together. They use iron masts extensively; there are two of the large discs on each mast; the upper disc shows red or white; and the lower disc shows green or white. When the upper disc is red, it must proceed with caution. When both are white it means that the route is clear.

The Philadelphia and Reading uses the manual block signal system in one place only, and that is controlling a gauntlet over a bridge. The operators at either end of the gauntlet work under the directions of a train dispatcher who tells them what kind of signal to display. At all main track switches they use a disc indicator, which takes the place of and answers the same purpose as the alarm bell on the C. & A. and the Queen & Crescent.

Their train order signals are of the small semaphore pattern, and they are connected with the first block signal in either direction, so when train orders are to be delivered, the block signal indicates caution and the train comes into the station under control.

The Philadelphia and Reading is a splendid place to go for information on nearly every subject. One of the many things of interest to me while I was there was the arrangement of the train dispatcher's office in Philadelphia.

I am quite sure it would interest any of you if you have an opportunity to see it. The man who is responsible for that arrangement is a member of this Club, and in speaking of it, he told me that he was of the opinion that train dispatchers should work up in a loft, and that they should go to the loft by means of a ladder and pull the ladder up after them, and he has arranged the office very much on that order. The gentleman to whom I refer is Mr. W. A. Garrett. (Applause and murmurs of "good.")

The present method of signaling on the Louisville Bridge, controlling trains between New Albany, Jeffersonville and Louisville was inaugurated at 12 o'clock, noon, April 9, 1882, and has therefore been in service more than 22 years, during which time there has not been a failure of any kind on account of the method of blocking. The maximum number of trains handled over that bridge in twenty-four hours is two hundred and twenty-five; I forget the occasion, but I think it was a reunion of the G. A. R. at Louisville on September 10, 1896, when that number was handled. They have a method of signaling where everything depends on the train dispatcher. The train dispatcher is the whole thing, so to speak.

The operator announces the approach of the train, and the train dispatcher tells him what to do. The dispatcher has before him a board about three feet long, and probably two feet wide, with the names of the stations reading from north to south in the center; on either side of the names of the stations are rows of holes, representing the schedules of trains. When a train starts from the north the dispatcher places a white plug at the top of the schedule on which the train is to run, and he moves it downward one notch at a time in advance of the train.

When a train starts from the south he places a red plug at the bottom of the schedule upon which the train is to run, and moves that plug upward one notch or one block in advance of the train. In addition to that, he has before him a train sheet just as we have it in any other train dispatcher's office, upon which he records the time of all trains at the different stations. This gives him a double check on all train movements.

When a train approaches a station the operator announces the train number and his office like this: "325 B. O." That means that train No. 325 is approaching Jeffersonville Junction over Block 3 and entering Block 4. The dispatcher says "Red," "Green," "White," as the case may be, and the operator repeats that, which indicates also that the proper signal has been displayed.

Trains of all kinds and all classes are allowed to follow each other under permissive signal, through any block except Block 4, which has several pretty bad curves in it. During foggy weather the dispatchers use extra precautions to guard against trouble.

Another place where they run trains without orders is on the N., C. & St. L. around the foot of Lookout Mountain between Chattanooga and Wauhatchie, a distance of six miles, with two intermediate stations, making the blocks average about two miles in length. At each station there is a small interlocking plant, switches and signals of which are controlled by levers in the tower. When it is necessary for a train to take a siding, the dispatcher tells the operator and the operator lines up switches and signals accordingly, and no orders are necessary. This method of signaling is very similar to that which I have described on the Louisville bridge; in fact it was copied by Mr. Thomas, who went to Louisville and spent some little time there and then returned to Chattanooga and put it into effect, with a few additional improvements and appliances, one of which is an arrangement so that when a train enters the block and the operator pulls the signal to clear, a red disc falls in front of the operator's face; one also falls in front of the face of the operator at the other end of the block. If an operator, by mistake, pulls the signal to clear while the disc shows red, meaning that the block is already occupied, he will be instantly reminded of his mistake by an alarm bell which is located directly over his head, and which commences to ring and continues to ring until the train is out of the block, or until the signal has been returned to normal danger.

This method of signaling is almost ideal; it means that there is a way to run trains by visible signals only with no written orders of any kind. (Loud applause.)

Another place where the train dispatcher directs the handling of the block system is on the Erie, where they use what is called the Mosier block system. It was inaugurated June 14, 1893, and the record that the Erie people have made with it is something to be proud of. During the Chicago World's Fair the Erie held second place in the number of passengers handled into and out of Chicago, and while they handled that immense volume of traffic, not a single personal injury of any kind or description did they inflict upon a patron of that road. They run trains by train orders, with train rights and train rules, just as they did before they had the block system. It is only an additional precaution. The operators announce the approach of a train and the dispatcher says what kind of a signal to display. They use three position semaphore signals—horizontal, red means danger; elevated, green means caution; depressed, white means safety.

The signals are connected with the telegraph keys so that it is impossible for the operator to answer his call or do any business on the telegraph wires while his signal is at a caution or at safety; it must be at normal danger before he can do any business on the wire at all.

If any of you contemplate the installation of a manual block signal system I would advise you to give the Erie method due consideration, without prejudice, before making up your minds definitely regarding what you will adopt. You will at least pick up a few good pointers.

Something brand new in the way of signaling is that which is now in effect on the Illinois Central, between Belleville and Carbondale, Illinois, and between Paducah and Central City, Kentucky. I never heard of it until a short time ago, when our present general manager, Mr. Benjamin McKeen, spoke of it and asked me to investigate its workings.

They call it a positive block signal system, and they have a method of carding which makes it very flexible; and almost the same as the permissive block system.

The signals are of the semaphore pattern, with two positions only. The principal thing of interest connected with this method of blocking is the blocking machine, the like of which I have never seen anywhere. The signals return to normal danger by gravity and are instantly locked automatically. Then it is impossible for a man to pull his signal to clear until the operator at the other end of the block has unlocked the signal for him.

I am unable to say to whom should be given the credit for this excellent method of locking, but I understand it originated with Mr. I. G. Rawn, of Chicago, and that it was developed and put into practice by his superintendent of telegraph, Mr. G. H. Groce.

The machines are made by the Taylor Signal Company, which is now known, I believe, as the General Railway Signal Company. I noticed one of the locking machines is on exhibition in this building; if you have time to look at it I know it will interest many of you.

I think this machine has given us a great big move in the right direction. (Applause.)

The Big Four, the Wabash, the B. & O., between Washington, D. C., and Washington Junction, and several other lines use the manual block signal system to protect trains against following and opposing movements on single track. They all border closely on the American Railway Association rules, but no two are alike. I shall not take time to describe them separately.

The Pennsylvania Lines can show you some of the finest automatic signals to be found anywhere, but it takes money to copy after them. The fact of the matter is, that all the different methods of signaling have merit, and the more one investigates, the harder it is to make up one's mind as to which method is really the best of the lot.

After I had given the matter what I considered due time and consideration, I was of the opinion that we needed automatic semaphore signals to protect trains against following and opposing movements on the Vandalia Line, but an estimate of the cost killed it.

My second choice was the manual block system to give the same protection. For some little time we hung fire between the Mosier and the American Railway Association—and after weighing very carefully the strong and weak points of each of those methods, we decided in favor of the latter, and took liberties only where such liberties are made permissible by the American Railway Association. In these places I inserted rules that were applicable to our division; they were passed upon and approved with very little alteration. Mr. Downing then turned over to me the work of installation, and immediately we set out to install the block system. Just as fast as the towers were completed it was installed, but never with more than five towers at a time, for the reason that we have only three offices on each section of the block wire and I could be at the central office and watch the work on the two blocks, until I knew positively that each and every one of the operators knew exactly what to do under any and all circumstances before extending the block system over that portion of our road. With this method we depend entirely upon the telegraph operators. They work on a separate wire, and the work of blocking takes preference over any and all other duties.

Three position semaphore signals are used, and a train is protected over every inch of its journey.

Each operator has before him a block record, upon which he records the time of all trains at his station, and also records the time at which trains enter and clear the block at the first station on either side of him. Before the clear signal is given, the operators have a positive understanding that the move will be protected. Trains are run by train rights and train orders and train rules, just as they were before we had the block system. It is only an additional precaution, and gives us a separate organization of men checking against any error that may be made by any conductor or engineman or train dispatcher.

Before the work of installation was entirely completed there was noticeable a great difference in the movement of our trains; it seemed the men realized all at once that they were protected, and faster time resulted from that time on. Our overtime began to decrease and continues to decrease.

During the months of August and September of this year we decreased in our overtime to the extent of fifteen hundred dollars for each of these months, as compared with the same months of last year.

The actual figures taken from our train sheets show that the number of freight trains handled in the six months, ending with September 30, 1904, decreased 301 over the corresponding period of last year. At the same time, the number of passenger trains run increased 923.

With that enormous increase in passenger traffic, it would only be reasonable to expect slower movement on a single track road, but I have gone into it carefully, and state positively that the movement of our freight trains and the movement of our passenger trains has been accelerated to a remarkable degree.

During the period mentioned, six months of last year, we handled 2,637 passenger trains, and the average time of these trains was a little less than 36 miles per hour, including all stops and delays.

During the same period of this year we have handled 3,560 passenger trains and the average time was 37.3 miles per hour, including all stops and delays.

Our banner month was June, 1904, when we handled 593 passenger trains, and the average time of those trains was 41.1 miles per hour, including all stops and delays.

I must not forget to say that the condition of our motive power is better and that we have additional facilities in the way of second track through Indianapolis yards, 2.5 miles; around Terre Haute East yards, 3 miles; and, from Collinsville into East St. Louis, 10.8 miles.

Those improvements have been of very great help to us, and it is not the intention to take a grain of credit from any other department. I feel that each ought to have whatever is due; at the same time, we can give them due credit and still there will be enough glory left for the manual block signal system to recommend it for use on nearly any single track railroad in existence.

I may have given out a wrong impression in the forepart of my remarks regarding the number of accidents we have had on the Vandalia Line; and if such is the case, I want to correct it right here, because we hold a record that is probably second to none, when it comes to casualties.

Now listen: On January 28, 1895, Mr. John W. Norton, a prominent citizen of St. Louis, was killed at Coatesville, Indiana, 28 miles outside of Indianapolis, when train No. 20 left the track on account of a broken rail. He is the only passenger who ever paid fare to ride over the Vandalia line that was killed in a train accident, although the road has been in operation for more than half a century. (Loud applause.)

We can not of course tell how soon misfortunes may come upon us, but we feel that the block system has been tested, and is equal to nearly any emergency. It has prevented several accidents that we know of, each of which would in all probability have cost the company more than the total cost of installation of a block system. It has restored confidence and a normal condition.

It is claimed that in England the block system is universally used, and that where one passenger is killed in Great Britain, fifteen hundred are killed in the United States.

Think of it! Such information peddled out in our daily newspapers has worked up the public of the United States to a very unpleasant stage.

It probably means that before a great while the laws of this country will compel the important lines, at least, to have some means of protection.

I feel that the manual block system will grow in popularity much more than the automatic, for single track lines, for the reason that the men who handle it are of great assistance in the handling of trains.

There must be an operator at every siding, and all of you transportation men know just exactly what it means to be able to give to a train five or ten minutes additional time; under certain circumstances, it may amount to hours before the end of the trip. That is why the manual block signal system accelerates train movement, reduces overtime and increases the capacity of a single track railroad.

Gentlemen, I thank you, one and all, for your very kind attention. (Prolonged applause.)—November, 1904, Meeting St. Louis Railway Club.

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Discussion of Current Topics

Chance to Elect a Good Man to the Chicago Bench.

Announcement was made in the October issue that Division 91 of the Order of Railway Telegraphers, of Chicaago, Ill., was officially supporting one of their members, Bro. D. G. Ramsay, for the very important position of judge of the superior court of that city. It now appears that not only his division but the national organization as well is supporting him, and that our esteemed sister organization—the Order of Railway Telegraphers—is as a body putting forth every possible effort with a view to the success of his candidacy regardless of his political identity.

Affiliation with a labor organization seems to have been in the past somewhat of a barrier to the success of men aspiring to important political positions. Such men have been made the target of opposition and antagonism springing from prejudice against labor unionism in certain directions from which emanated more or less influence of the character created and controlled by wealth. There is probably no public official who possesses as great individual power and opportunity to retard the progress of organized labor and discriminate against wage-earners more effectively than he who occupies the position of judge. and history records many instances where such opportunity has been taken advantage of, as well as the fact that the motive actuating such a course was not a desire to comply with the law or to "find" in accordance to the evidence, but pure and unadulterated prejudice against organized labor or in favor of the employing interests involved. Neither is there a public official whose partisan political identity is of such absolute indifference in the administration of his office or the performance of his duties. It is of vastly greater importance to Republicans and Democrats alike that a candidate for the responsible position of judge be fair and honest, than that he belong to either one party or the other. If a judge is fair he will treat organized labor fairly, and if he be prejudiced against wage-earners or their unions he is bound to discriminate against them when deciding cases in which their interests are involved; if he does not do so intentionally he will unconsciously, in accordance with pre-established convictions. There are on record many instances where judges in rendering decisions unfavorable to organized labor have freely and openly expressed their antipathy to it, and injunctions flagrantly restraining members of organized labor in the exercise of their simplest constitutional rights have become so common that they have almost ceased to excite comment. Then again judges who, prior to their election have served as attorneys for corporations are influenced in favor of the interests that it has been their duty, and in many cases, a second nature with them, to protect and advance.

Organized labor asks no special favor at the hands of any judge. All it asks is a "square deal," and we are more liable to get a square deal from a judge who has not been a corporation attorney than we are from one who has filled such a position. When we consider the outrageous decisions that are given by some jurists, for instance, in connection with the fellow-servant doctrine, we can the better appreciate the advisability of taking advantage of an opportunity to elect a man who, from his contact with mankind in general, can view such things with unprejudiced eyes. We do not ask for partiality, but for the benefits of impartiality. D. G. Ramsay's record as a citizen, railroad employe, attorney, as a member and Grand officer of his order, and as a man generally is unimpeachable. It is naturally to be inferred that if Bro. D. G. Ramsay is elected to the position of superior judge in Chicago, he will be a fair and impartial judge; and judicial fairness and impartiality is all we ask for. In addition to this there is the incentive of placing on the bench a railroad man who has always been true to every trust as a Grand officer and sincere and consistent as a member of the organization representing his calling, and always a warm advocate of and firm adherent to its principles. If Bro. Ramsay is elected judge of the superior court of Chicago he will prove, by every test which will permit of judging a man's future course by his past record, to be a fair and impartial judge, and that is all we ask any judge to be. In order to elect him it will, however, be necessary for the workingmen of that city to *go to the polls and vote for him at this (November) election*.

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Union Legislative Meeting.

A call has been issued to the members of the O. R. C., B. of R. T., B. of L. E., and B. of L. F. in Oklahoma and Indian Territories which should certainly be heeded and responded to by those to whom it is addressed. In the construction of constitutions and enactment of laws it is essential that wage-earners be active in taking the necessary steps looking to the protection of their own rights and the advancement of their well-being. There is not the slightest doubt but that other "interests" will be influentially and diligently represented, and if the railroad men are apathetic they can depend upon it that they will suffer the consequences.

The call is as follows:

Shawnee, Okla., Sept. 21, 1905.

To the Members of the O. R. C., B. of R. T., B. of L. E., and B. of L. F., in Oklahoma and Indian Territory—

GREETING: Dear Sirs and Brothers—We, the undersigned committee, representing the above-named orders, have been duly selected by our respective organizations to issue a call for a union legislative meeting to be held in Shawnee, Okla., November 23-24, 1905, to organize legislative boards according to our different constitutions, to take up and discuss any other matters which may come before the body pertaining to legislation in the new state to be, Oklahoma.

The different organizations in Shawnee realized the necessity for some one to take the initiative in this matter, and being nearly centrally located in the two territories, came to the conclusion that the meeting should be held in Shawnee for the reason that the organized bodies of this city have in previous years maintained a legislative board in the capitol at Guthrie.

You are all well aware that if we are to have any legislation placed in the constitution of the State of Oklahoma that will be beneficial in any way to railroad employes, we have got to fight for it, and fight hard; therefore it becomes our duty to get organized, and organized thoroughly, for you are certainly aware of the fact that corporations are well organized.

We have made this an official call on each division and lodge of the organizations in the two territories to send one delegate to attend said convention with credentials to represent said organization, so that we may take up and talk over the question of legislation from each section of the two territories, and organize legislative boards according to our different constitutions. We will also take up the question of devising ways and means for handling legislation to the best interest of the railroad employes in the coming State of Oklahoma.

We are of the firm opinion that "a stitch in time saves nine," so let everybody put their shoulder to the wheel. And, let us, as railroad employes, get in on the ground floor, for we believe the time is not far distant when we will have a new State and a constitutional convention to make laws for us.

We most sincerely ask each division and lodge in surrounding States having members running into and out of the two territories to join us in this meeting and to send delegates to meet with us who can give us some of their experiences in legislative matters in the adjoining States.

Now, brothers, take this matter up in your division or lodges, and elect and send to the meeting delegates to act in this matter for the benefit of the railroad employes.

Meeting will be held in O. R. C. Hall, corner Main and Broadway, at 10 o'clock a. m., November 23-24, 1905. Members of the different organizations that can are earnestly requested to attend this meeting.

Signed:
N. C. WOOD, O. R. C.,
J. R. COLEMAN, B. of R. T.,
JAMES MCNERNEY, B. of L. E.,
O. C. STRODE, B. of L. F.,
Committee.

Miscellany

Train Wrecking.

Noting editorial reference on the subject of train wrecking in a recent issue of the Magazine, I desire to very earnestly endorse your advocacy of strenuous Federal legislation with a view to the prevention, as far as such an agency can operate in that direction, of this heinous crime. The accompanying illustrations show how successfully the criminals responsible for this particular wreck accomplished their fiendish purpose. On July 22d last, on a piece of track on the Southern Pacific Railroad, which is inspected twice daily, a fast passenger train, which fortunately happened to be running at not over eleven miles per hour, was wrecked by the removal of a rail at a point on the right of way apparently selected for its dangerous character, and the horrible results certain to accompany the derailment of a train in the immediate vicinity. The engine crew, consisting of engineer, Bro. Chas. Thompson, a member of the B. of L. E., and fireman Bro. Taylor, of Lodge 546, B. of L. F., both lost their lives. The engineer was killed outright, and Bro. Taylor, who died from his injuries in a few days after the accident, had no thought for himself, but, being aware of his engineer's fate, expressed solicitude only for his (the engineer's) family, the only words he uttered being expressions of concern for "poor Mrs. Thompson and the children."

Engineer Thompson was caught beneath the wreck and ground to pieces. What the additional horrors would have been had this train been late and making up time, or making even running time, are too terrible to contemplate. The wreckers had drawn all the spikes out on the inside of the rail, so that there would be nothing to hold it in place, and in their haste to depart left one of the tools with which they did their hellish work. That those injured in wrecks of this kind, as well as the families of those killed, should receive equitable damages from some source is, of course, but simple justice. The question arises, however, as to who should pay the damages. The railroad company, of course, many will answer without giving the matter a thought; but is the railroad company in any way responsible for such wrecks? Most certainly not. Its officials have taken reasonable, and, I might add, many a special precaution against occurrences of this kind. They have their track patrolled and inspected, and unless they would employ a standing army for the purpose of guarding every mile of their right of way against the operation of the heinous train wreckers they can not always prevent the commission of these crimes.

There is another institution which is in the business of crime prevention, and to the maintenance of which the railroad company pays enormous sums of money annually, or semi-annually, in order that the lives of its employes and passengers, as well as its property, may be saved from intentional and premeditated destruction at the hands of criminals—that institution is the state. Fairness and justice demand that where life is lost, and property destroyed, through lack of reasonable precaution on the part of the state to prevent it, the state should pay damages just as in some cases counties are compelled to make restitution for property destroyed by mobs, simply because their riotous exploits were not suppressed by the power of government, to which the people pay tribute for protection of life and property in the form of taxes. I can realize, of course, that such a rule would not be applicable in every case, but where the lives of trainloads of human beings are at stake (to say nothing at all of property), and can be destroyed with such little effort, it seems as though some special steps should be taken by the state to protect them. The state, however, seems powerless to even effect a capture. It is safe to say that if damages were being paid from the public treasury for persons killed or injured through the operation of the train wrecker, several specimens of that class of criminal would ere this have felt the noose of the hangman's rope around his neck. Whatever the state may decide to do, I feel that Congress can not act too soon, or too vigorously, in passing legislation with a view to the extermination of such demons.

FRED BARR.

WRECK ON THE SOUTHERN PACIFIC

BROTHERHOOD OF
LOCOMOTIVE FIREMEN'S MAGAZINE

BROTHERHOOD DEPARTMENT

A "Unity of Action" that is Sure to Defeat the Purpose of Organization.

In the October issue of the Brotherhood of Locomotive Engineers' Journal appears an editorial entitled "Unity of Action," through which it is attempted to defend the policy of that organization in forcing our members to withdraw from our Brotherhood after joining its ranks. The Journal apparently feels that it should offer some excuse or explanation to the rank and file of its membership in justification, or palliation rather, of said policy, which on its face is so clearly antagonistic to that spirit of progress, tolerance and liberality characteristic of our present day and generation.

It states that "confidence is built on trust, and trust on confidence in one another's integrity." That the "trust" spirit predominates in such a policy not even its most ardent advocates will undertake to deny, but that membership in the Brotherhood of Locomotive Firemen or any other bona fide and properly conducted labor organization should shake "confidence" in any man's integrity is an insinuation that not only carries its own refutation, but proclaims a spirit of disdainful exclusiveness and arrogant insolence that is not only clearly at variance with the aims of unionism, but calculated to work injury to and retard the progress of the entire organized labor movement in its work of emancipating the toiling masses, defending their rights, and protecting their interests.

The editorial states that if they (the members of the B. of L. E.) are to possess the confidence of their associates in advancing "special" interests they can not "divide their allegiance." "Divide allegiance!" and between what? Between interests that are conflicting or divergent? Between organizations that are antagonistic in their respective purposes? The application of this term in the defense of such a policy demonstrates not only the weakness of that policy, but as well the absurdity of the contentions that are utilized in bolstering it up. The terms "divided allegiance" and "dual obligations" have, ever since the world began, been the piping plaint of proscriptionists and the arguments of those who would curtail that legitimate personal liberty of the individual which advanced civilization undertakes to guarantee him. In this case, *where* is the *division* of allegiance claimed by our worthy contemporary? Between two Brotherhoods possessing not only a close mutuality of interests, but unquestionably interdependent in the defense and protection of those interests. Between organizations of which one is essentially the educator, not only in principles of industrial, fraternal and protective brotherhood, but technically as well, and the other the beneficiary of its work. Were the principles of the Brotherhood of Locomotive Firemen as a progressive, educational, protective and industrial institution not clearly and thoroughly established there might be some slight ground for apprehension as to the result of "divided allegiance," but the world knows, and it has been proven time and again, that in its possession of these characteristics our organization will not only gain by comparison, but stands conspicuous by virtue thereof.

The Journal asserts that "an obligation to that 'special' class to which one belongs by occupation with every honest man is not only a guarantee that he will do nothing to injure any other class of organized labor, but a singleness of that obligation is essential to confidence in his integrity." An obligation to that special class to which one belongs by occupation is most commendable and most desirable, but where the administration of such an obligation is calculated to intoxicate the recipient with a false sense of superiority and self-sufficiency, it is certainly not effective in guaranteeing that he will "do nothing to injure any other class of organized labor." However, from our recent experience with gentlemen thus obligated we are in a position to say that the guarantee to other labor organizations of freedom from injury from the inflicting of which it is credited with restraining those bound by it, is not by any means the most reliable. To even those disinterested it is apparent that the assertion that a singleness of that obligation is "*essential*" to confidence in a man's integrity is nothing less than a gross and gratuitous insult to members of the Brotherhood of Locomotive Engineers holding membership in the Brotherhood of Locomotive Firemen either by virtue of immunity from the application of that section of the B. of L. E. constitution forbidding such dual membership, or in violation thereof. Is it not a coarse suggestion, if not an open invitation, to the proscriptionist element in the B. of L. E. to subject such men to the pain of social ostracism, and, by thus questioning their integrity as men, fan the flame of prejudice against them, thereby creating enmity between brothers, and so giving *another* practical demonstration of the sacredness of the "special class" obligation so fervently advocated? Let us say in defense of those men who are members of both Brotherhoods that as a class their integrity is irreproachable, their adherence to Brotherhood principles unassailable, and their loyalty to their obligations in whatever order they may belong, whether industrial or fraternal, far beyond the tainted breath of suspicion or adverse criticism. Let us add that if the proscriptionists in the B. of L. E. are as well equipped in the matter of personal character and integrity, they are entitled to congratulations.

Continuing, the Journal says that "the time will surely come when dual obligations will be understood as divided obligations, which are always inconsistent with unity of action," etc. We can easily understand that the time *will* come when *occasion* for "dual" obligations may or will be obviated as far as the enginemen of the North American continent are concerned, but that the policy of narrowness, exclusiveness and discrimination which prompts such a prediction will ever become the permanently established order of things can be expected when water will freely run up hill, because the *natural* tendency of humanity is towards liberality, tolerance and fraternalism, and nature, in working out her plans, *will not be obstructed or even intimidated by any policy the ruling element in the Brotherhood of Locomotive Engineers may see fit to inaugurate.*

It would be just as logical to say that a man's "dual obligation" to his parents or to his state or provincial and national governments was objectionable and reprehensible, or that the hundreds of thousands of men who belong to two and three or more different fraternal orders must necessarily be untrue to one or the other, and yet there is not in existence today between any two fraternal organizations a more pronounced similarity of purpose than that which characterizes the B. of L. F. and is professed by the B. of L. E. The absurdity of such a contention is so self-evident that we will dismiss it without further comment.

The Journal goes on to say that if "we are obligated to two or more, each of these may well look with suspicion upon the obligation so little fixed in its purpose, and which may at some time compel *one so obligated to be unfaithful to one or the other.*" Must we infer from this that the "wheel-turning" ultimatum enunciated by the Grand Chief of the B. of L. E. in the Northern Pacific controversy is to become a permanently fixed policy of the Brotherhood of Locomotive Engineers, and that preparations are in progress with a view to future aggressions against and conflicts with our organization? If so, we venture the assertion that a *duality* of obligation is in no sense "essential" to "unfaithfulness" to the B. of L. E., as in the event of an attempt to follow such a course there will be found thousands of men who will promptly and emphatically repudiate the "*single*" obligation binding them to the organization which demands or sanctions it.

The Journal's editorial concludes with the appeal, "let us be consistent and faithful to our *one* obligation to organized labor, and we will be in the best condition to foster our own interests and demonstrate our '*honest*' friendship for all other classes of organized labor." By way of emphasis the word "honest" is italicized. The character, however, of an "honest" friendship dependent for its existence upon the carrying out of such narrow ideas is not difficult to estimate or analyze. The source from which this editorial is inspired is very clearly explained and accounted for in an article appearing elsewhere in this issue, entitled "This is What a B. of L. E. Man Has to Say," and to that element in the B. of L. E. represented by its writer (and the future power of which he logically predicts) must that organization look for deliverance from the whirlpool of inconsistency into which it is being drawn.

An engineer is an engineer regardless of whether he belongs to the Brotherhood of Locomotive Engineers or the Brotherhood of Locomotive Firemen, and to brand him with the stamp of ineligibility to membership in an organization assuming to represent his class of railroad employes because he insists upon remaining in a Brotherhood which has fostered and protected his interests years before the Brotherhood of Locomotive Engineers would think of extending a helping hand to him, is not only a gross injustice to the individual himself, but an affront to the Brotherhood of Locomotive Firemen, which, as a powerful and prosperous organization, dignified and progressive in its character and broad and liberal in its views, it will not supinely submit to.

If those relations of friendship and cooperation between the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen which are more essential to the success of the former than to that of the latter are to prevail between them, they must exist upon a basis of equality and mutual respect, and not under conditions involving aggressive insolence on the part of one and debasing submission on that of the other. Those members of the B. of L. E. who think that their identity as such renders them in any sense the social or moral superiors of the B. of L. F. man should disabuse their minds of the idea *at once*, as it springs from a vanity that is utterly incompatible with a properly developed manhood, laughably ridiculous to all sensible and level-headed people, and suggestive of a mind that is not well balanced; and when we say B. of L. F. man we desire to be clearly understood as meaning not only B. of L. F. engineers, but firemen as well. It is an old proverb that those bent on wrongdoing are never lacking for an excuse. Thus has it been in the past history of the world that nations and individuals envious of the superior merit, success and prosperity of other nations and individuals who, on account of their peaceful and industrious disposition, were not belligerently inclined, have upon one or another apparently plausible pretext, sometimes with success, often with failure, antagonized them even to the extent of open hostilities, with the triple object in view of destroying them as competitors, controlling their resources and confiscating their wealth. It is evident that the spirit of jealousy and avarice actuating such arrogance and aggression has not yet been eradicated from the human character.

The Brotherhood of Locomotive Firemen maintains the best and cheapest accident insurance in existence, thus extending its protective ægis not only over the industrial interests of each individual member, but as well over his home and family when death or permanent disability overtakes him. Such a combination of advantages naturally inspires the grateful and permanent loyalty of the individual toward the body at large, and that loyalty asserts itself even after conditions arise making permissible his affiliation with another industrial Brotherhood which desires his membership, but in all particulars named can not offer him as great advantages. His insurance in the B. of L. F. is to him a property right, and this property right he finds he must surrender as a condition to remaining in that other Brotherhood. If he declines to do this and prefers to forego whatever advantages he may imagine membership in the latter organization will afford him, he will find that his right to choose is questioned, and discovers coercive tactics in operation whereby it is proposed to force his acceptance of such membership, involving, as it does, his sacrifice of the property right referred to, as well as identity with an institution which, to accomplish such an end, stoops to attempted conspiracy with his employer with a view to the destruction of the protective efficacy of the Brotherhood of his first choice, in the hope of compelling him to join its own ranks and carry an excessively costly insurance without any accompanying advantages superior to those he enjoyed in the organization to which he would rather belong.

Verily, verily doth it seem that a man's right to "life, liberty and the pursuit of happiness" is not yet universally recognized, even in this land of the free.

The Gospel of Brotherhood.

I come to preach on the text of love
From the gospel of brotherhood,
To help, if I may, in finding a way
That leads to a higher good;
To picture the light that is shining bright
On the Future's upturned face;
And to whisper a hope whose breadth and scope
Is as wide as the human race.
It is this: the hour is almost here
When the races shall rise as one,
And shall all join hands from the thousand lands
That are kissed by a common sun;
When the cannon's roar shall be heard no more
And the war-flags shall be furled;
When the lily-white banner of peace shall float
O'er a union of all the world.
There are glimpses of glory in Paradise,
But they all are not so bright
As our own dear earth will be, if we
Can open the reign of right;
If we as brothers will love each other,
And work as best we can
In the glorious labor of lifting our neighbor
And helping our fellow man.

X. Rays.

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To the Ladies Society.

The readers of the department of the Magazine devoted to the Ladies Society are of course sincerely interested in making our publication a great success. With this knowledge in view, the Editor and Manager, in selecting the premiums to be offered, has selected a number of splendid articles of jewelry that will appeal favorably to our lady readers.

It is the purpose of the Editor to add several thousand new subscriptions to its mailing list within the next sixty days, and it asks the members of the Ladies Society to help in this great work.

The beautiful locket No. 20, which is fully described and illustrated in our double-page premium announcement published in the advertising pages of this issue, will not fail to elicit the interest of any woman who loves pretty jewelry. In addition thereto there are elegant hat pins, etc., that can not fail to please. These premiums are first-class in every respect and are fully guaranteed.

Almost any railroad or shop man will readily give you $1.50 for a year's subscription to the Locomotive Firemen's Magazine, to secure the technical information, questions and answers, etc., that it contains every month. You have no doubt planned to give a number of Christmas presents this year, and you can earn numerous presents which will be wholly acceptable to your friends and loved ones by simply soliciting and sending in a few subscriptions for the Locomotive Firemen's Magazine at $1.50 each. Look the list over carefully and see if you do not think so. Let us have your help. Do not wait until tomorrow, but begin today. If you need some sample copies, write the Editor and Manager. He will send you what you need, but by all means do not miss this splendid opportunity to earn some excellent presents by sending in a few subscriptions for the Magazine. All orders should be addressed direct to John F. McNamee, Editor and Manager, 806-7 Traction Terminal Building, Indianapolis, Ind.

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Back Numbers of the Magazine.

Back numbers of the Magazine can be secured from the parties whose names and addresses are given below:

Wm. H. Klecan, 2136 So. 9th St., St. Joseph, Mo., has the following copies: All of 1891, excepting July and November; the last six months of 1893; all of 1894, 1895, 1896, 1897, 1898, 1899; all of 1900, excepting May and June; all of 1901, 1902, 1903 and 1904.

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Let Us Increase Our Subscriptions.

Our members everywhere are urged to take up the work of booming the subscription list of the Magazine. The Magazine is universally acknowledged to be the leader in the railway technical field, and there is not a railroad man in engine, train or shop service who can not amply profit from a regular reading of our technical pages.

Our members receive their Magazine every month and read it very carefully, but do they stop to inquire whether they have friends or neighbors who are engaged in railroad service who are not regular subscribers for the Magazine? Those are the men whom the Magazine must, of course, look to for its outside subscription list. Those men will give you their order for a year's subscription in a minute if you will but show them a copy and ask them to take it for a year. Did you ever ask your engineer to subscribe? He will find our mechanical department of direct benefit to him personally and well worth the $1.50 that it costs.

The Magazine wants every member of every lodge to appoint himself a committee of one to see to it that every subscriber that it is possible for him to secure for the Magazine on his division is booked and sent in during the next sixty days.

Does the Magazine expect all this help for nothing? No, indeed. If you will refer to our double-page premium offer in the advertising pages of this month's issue you will be astonished at the remarkable assortment of high-grade premiums which we are offering for small subscription orders. The premiums which we are offering are of excellent quality and they are given for from one to four subscriptions. Nothing has ever been offered that equals these inducements. It will pay you to look over the premium list. There are articles there that you want for yourselves, others that you would like to give to your wife (or your sweetheart) for a Christmas present. It may be that there is something there that you would like for your boy, your girl, or a friend. Time is growing short, and now is the time to set out to secure some of these premiums. Pick out the premiums you prefer and send in a sufficient number of subscriptions at $1.50 each to entitle you to same, and the premiums will be sent to you at once. Full descriptions and illustrations showing the appearance and quality of the goods are given in the double-page advertisement in this issue. The illustrations were photographed direct from the articles shown, and are faithful representations in every respect.

Help us to add many thousand new names to our subscription list before the end of the year. Do not wait for other members to make the start. This request for new subscriptions is made direct to *you*, and if *you* will do your part in pushing the Magazine (and remember it is your Magazine), your Magazine will be sure to prosper thereby.

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Sparks.

Mr. J. P. Kelly, who for several years past has filled a very important position with the New York Air-Brake Company, and whose able and efficient articles descriptive of the air-brake equipment manufactured by that concern have appeared almost continuously in the columns of the Magazine before and during that period, has severed his connection with that institution, having recently tendered his resignation. Mr. Kelly, through his writings, is well and favorably known to our readers, and the Magazine hopes to soon hear of his re-entering the railway mechanical field in a position fully commensurate with his capabilities and compatible with his high standard of merit.

Your attention is called to the fact that our premium offer is still open to all. The subscription list is on the increase, but we would like to have your help also.

If you desire to receive a nice B. of L. F. emblem ring, send in two subscriptions, and we will mail one to your address. Get busy, boys!

The Devine Specialty Company, of Indianapolis, takes full-page space in this month's issue of the Magazine to set forth the many attractive novelties which they have opened up for the Christmas holiday trade. They have bargains to offer, and their offers are genuine bargains.

Your leisure time could be put to good advantage in soliciting subscriptions for the Magazine, thus helping to swell its circulation, and placing yourself in a position to receive either one or both of our premiums.

If the overalls you are wearing are not equipped with the patent nickel spring suspenders which are advertised regularly in this Magazine by the Metal-Elastic Manufacturing Company, of Indianapolis, you are missing ease and comforts that are yours by right. Your dealer can furnish you with overalls having the patent suspender if you will insist upon it.

New advertisements are appearing in the Magazine every month. Do you know why? It is not because these business men have more money than they know what to do with, but because they have learned that railroad men and their families are the most valuable and important customers they can secure. Consult the advertising pages of the Magazine and keep posted on what is best for you to buy and where you can buy to your greatest advantage. So long as you do this much for yourself and the advertisers who patronize your Magazine you will be aiding the Magazine in a great measure in keeping its advertising columns filled with announcements of high-grade goods.

The Magazine sells on its merits. Send for sample copies and place them among your friends, and you can be assured that they will do the rest.

Will be pleased to have you send in subscriptions, whether retaining commission or desiring a premium. It is up to you, boys!

The Canton Stove Manufacturing Company, of Canton, Ohio, are making splendid, high-grade heating stoves and ranges, and instead of selling them through the regular trade channels are selling them direct from their factory to the consumer at prices that are exceedingly low for reliable stoves. Under their plan it is possible to buy at about one-third less than at the retail store. The company guarantees all their stoves and allows 30 days' free test before final purchase. A handsome illustrated catalogue will be sent free on application.

Your co-operation will help swell the circulation of the Magazine to the 100,000 mark. Are you willing?

If you already have a knife and a ring, secure others. They will come in handy to give to your friends, and will certainly be acceptable. No matter what lines of business one follows, this knife will prove useful, and a ring bearing the emblem of any order to which one belongs will be appreciated.

The advertisement of the Fifth Avenue Tailors, of Chicago, appears in this issue of the Magazine for the first time. Railroad men are universally acknowledged to be good dressers, and the proposition of this advertiser should appeal to our subscribers very strongly.

The officers and members of Lodge 390 wish to express their sympathy and condolence to the bereaved family and relatives of Bro. J. E. Brown, who lost his life in a wreck which occurred on the I. M. & S., September 16, 1905, at Middlebrook, Mo. His remains were taken to his late home in Indianapolis, Ind., for burial, and were accompanied thither by the following members of Lodge 390: James Creighton, Master; C. G. Bauer, Secretary; W. J. Nirk, Treasurer; A. Nirk and A. E. Beazy. Bro. Brown was a true Brotherhood man, a willing worker, and always commanded the respect and admiration of every one that bore his acquaintance.

The full-page advertisement of Loftis Brothers & Co., of Chicago, has been published regularly in our Magazine for many months. This firm is building up a good reputation among the people reached by our book, and those contemplating the purchase of diamonds for Christmas presents would do well to write to Loftis Brothers today for their elegant Christmas catalogue.

Do you know that the Magazine wants you to send in 50,000 new subscriptions within the next sixty days?

Have you seen the elegant new list of premiums that is published in the form of a double-page advertisement in this issue of the Magazine?

Mr. Angus Sinclair, of New York, solicits the B. of L. F. boys to become subscribers to Locomotive Engineering, in his advertisement published elsewhere in this issue. Locomotive Engineering is a fine railway technical paper, and no reader of the Locomotive Firemen's Magazine can afford to do without it. Mr. Sinclair is also author of the famous book entitled, "Locomotive Engine Running," and is publisher of many other interesting and instructive books on the locomotive. Send for his catalogue. It will interest you.

If you desire a nice ring with the emblem of any order that you may belong to, you could not secure one easier than by sending in two subscriptions to the Magazine.

Bro. C. Edgar Wooden, Jr., Secretary of Lodge 512, writes that his lodge has in waiting two applicants for admission to the B. of L. F. juvenile or junior department—if such is ever organized—in the persons of William F. Chaney, Jr., and F. D. Harbaugh, Jr., agen ten and eight weeks, respectively, whose fathers have mastered the art of floor-walking in the wee hours of morning.

Now, boys, get busy and solicit subscriptions for the Magazine, and you will be surprised to find how easy it will be for you to make a little extra money during leisure hours.

Bro. T. P. McCormick, of Division 114 B. of L. E., Waterloo, Iowa, has compiled a very valuable little book entitled, "Gems of Knowledge for Engine and Trainmen," which treats on the maintenance and proper care of the air brake, signaling system, and break-downs. It contains valuable instruction for every day use on the road, and being of vest pocket size, can easily be carried by the engineman or trainman wherever he may go. It is handsomely bound in red leather, contains 80 pages, with gilt edge and title in gold, and will be sent by mail upon receipt of 55 cents. Bro. McCormick is a disabled locomotive engineer, and has adopted this manner of introducing the work among railroad employes at a low price as a means of livelihood. Persons desiring to obtain copies of this book should address him at 339 Saxon St., Waterloo, Iowa.

An attractive advertisement of Clapp's Ideal Steel Range is published in this month's Magazine. This should elicit the immediate interest of all our lady readers who may be contemplating the purchase of a new range. When you can get the best range on the market at a saving of from $10 to $20, freight prepaid, by answering an advertisement in the Locomotive Firemen's Magazine, you owe it to yourself and also to the Magazine to take advantage of the exceptional offer.

Would you not like to make your wife a present of an elegant locket for Christmas? You can get a beauty by sending in four subscriptions for the Magazine.

Do you know that the Magazine is depending on you to send in 50,000 new subscriptions? If you can not send them all in at one order, send what you can and let the others follow as soon as possible.

Information regarding commissions and premiums offered by the Magazine to those who desire to solicit subscriptions will be freely furnished upon application. Write to John F. McNamee, Editor and Manager, 806-7 Traction Terminal Building, Indianapolis, Ind.

The attention of our readers is called to the importance of requesting changes of address before it is too late to take effect with the following month's issue. All changes should reach this office on or before the 18th of the month to take effect with the following issue.

Save your eyesight by using the Non-Strain Goggles which are advertised in this Magazine by the Ophthalmoscope Company, of Toledo, Ohio. Thousands of men are using them, and speak highly in their praise. Your watch inspector can supply you, and if not, write direct to the manufacturers at Toledo.

The members of Lodge 238 wish to express their sympathy on the death of Bro. M. E. Smith, who lost his life in a collision on the 7th day of September at Obion, Tenn. His body was found on top of the boiler, burned to death, and his suffering must have been fearful. He was a good, true, loyal Brotherhood man and was esteemed by all who came in contact with him. Resolutions of sympathy and condolence were drawn up, a copy of which was sent to the bereaved family.

A good furnace in your home means added comforts during the long winters and great economy in your fuel bills. The Schafer Furnace Company, of Youngstown, Ohio, are advertising in our Magazine for the purpose of selling furnaces. If you will answer their advertisement you will receive in return valuable information on this most important subject.

Bro. Henry F. Coyle, of Lodge 496, announces that his lodge will give its third grand annual ball at Columbia Hall, Jersey City, N. J., November 16, 1905, and a cordial invitation is extended to all brothers. The arrangement committee consists of: Chairman, Henry F. Coyle; Thomas W. Brewer and William Graham.

Have you received one of the Wonder knives we are offering as a premium for two subscriptions? If you have not, would advise you to go after one immediately. It is certainly well worth the time you spend getting the subscriptions. It is a "wonder."

Have you seen the full-page advertisement of Crofts & Reed in this issue? A very interesting report by Bros. Clark and Warren, of the O. R. C., was published in last month's Magazine, and it would seem that these people have a proposition that should be taken advantage of by every one of our readers. Messrs. Crofts and Reed say they will be very glad to have any of you call at their factory at any time, as they are always open for inspection. You will no doubt find it very interesting, as Bros. Clark and Warren said, when they left the factory, "Our only regret is that we can't spare the time to stay here another hour, at least." We hope every one of our readers will send for their catalogue, any way, as a postal request is all that's necessary.

If there is any trouble in the delivery of your Magazine owing to imperfect address or for any other reason, kindly notify the Editor, and the matter will be given his immediate attention. A postal card is all that is necessary to do this.

Please give the number of your lodge. your old address, the office you hold, if any, in your lodge or on your local or joint protective board, in addition to your new address, when sending in notification of your change of address.

If there is a railroad man of any description in your city who is not already a subscriber for our Magazine, do not let him go another day without giving you his subscription. His subscription will help you to a valuable premium.

There is one good way to secure new subscriptions for the Magazine, and that is to ask your associates on the road to give you their orders. No well-regulated railroad man can afford to do without the Magazine.

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Forum

The Open Door Question as Viewed by a General Chairman.

I have read with much interest the editorial entitled "A Word to the Wise," and Bro. Maier's article, "The Question of Jurisdiction, or a Victory for the Open Door," appearing in the October issue. It is a well-known fact that for several years the Brotherhood of Locomotive Engineers as an institution has been encroaching on our rights in more ways than one, and it has taken time for the ultra conservative element in the Brotherhood of Locomotive Firemen to fully realize that they are having their feet caught between the reverse lever and the quadrant, and that the lever is being dropped intentionally by those in the B. of L. E. who have been and still are controlling the policy of that organization. I believe that all such can now see and understand our position and realize fully just what our future policy and purpose relative to the question of jurisdiction shall be.

I glory in the manhood of our Grand Master, John J. Hannahan, when, in words too plain to be misunderstood, he defined that policy and submitted his ultimatum to the Grand Chief of the B. of L. E., as related in Bro. Maier's article, and I furthermore believe he is correct when he said to that gentleman "your men will not scab even if you order them to do so," for that is in effect what he did say. There may be in both the B. of L. E. and the B. of L. F. a few men who do not measure up to what may be regarded as the proper standard of honor and principle, but they are very few, as would no doubt be proven in such an issue.

Suppose, for instance, on the P., D. & Q. R. R. the engineers find it necessary to strike, where will they first look for assistance? Will it not be to the very men of whom it was declared by their chief "they would do everything in their power to keep the wheels turning?" Would the Brotherhood of Locomotive Firemen order its members to sign the book and take the engines out and "keep the wheels turning" in the event of such an occurrence? No, their sense of honor and manhood and their loyalty to the great emancipating principles of organized labor vastly outweigh in their character both individually and collectively the natural instinct of resentment or retaliation; but as a militant necessity involving the great question of self-preservation —what then? Does the Grand Chief of the B. of L. E. realize what he is putting his organization up against? Does he know that as a body we can fire and run much better than those in his organization who would obey his command to "keep the wheels turning" can run and fire in the event of a legally declared strike on the part of our organization? If he has had any pipe-dreams that have led him to think differently, let him have a few of his men who have been running for three years undertake to administer to the combustive needs of as many of our modern battleships. I think the result of such an experiment will make his vision much clearer on this point. Are we to understand from this gentleman that in his expressed determination "to keep the wheels turning" he reflects the sentiment of his organization in this particular and that the firemen can expect, should they ever be forced to take a stand for the preservation of their rights, to find their engineers of yesterday taking the engines they have fired for years out as the firemen of today? Is Mr. Stone aspiring to the distinction (?) of having his name associated in the history of the labor movement with those leaders in the professional strike breaking business—Messrs. Currie and Farley and others of their ilk? Does he undertake to proclaim broadcast over this North American continent that he can utilize his organization at any time to hold the firemen in subjection and thus encourage in their oppressive tendencies those who may be inclined to treat them unfairly? Does he imagine that the firemen have gone to sleep and will not waken up until they find their engineers prepared with scoop in hand to fire their engines should the necessity arise for them to step off? Does he think that the B. of L. F. men are a crowd of sycophants with a streak of gelatine where their backbone ought to be? If so he will discover that he is sadly mistaken, and this I assert from a practical and official knowledge of how matters stand and am speaking, not for myself individually, but for the firemen of one of the largest systems of railroad on the North American continent.

It will be remembered that professional strike breaker Farley in one of his first utterances after arriving in New York said, "I want to get a chance at the railroad men next." It would appear at least as far as the firemen are concerned that his desire will not be gratified, as another with ambitions in his line proposes to monopolize the strike-breaking industry as far as that particular branch of railroad service is concerned. Now the question is, will the B. of L. E. as a body stand for the utterances of its chief, or will it show to the world that it is true to the principles of organized labor and repudiate such consequent misrepresentation of the real sentiments of its membership. The B. of L. F. has for years, with exemplary patience and tolerance, born of a love of harmony and fostered by a strong instinct of true fraternalism, refrained from taking any retaliatory action against the B. of L. E. regardless of all the justification it has had for such a course.

In its conventions no official steps have ever been taken either by the adoption of resolutions or otherwise with a view to resenting the continuous unfraternal, discourteous, ungenerous, yes, hostile attitude which for years the B. of L. E. has maintained toward it. We can now see the extent to which our policy in this particular has been appreciated. Just one instance as exemplification of the loyalty of the B. of L. F. boys to their engineers and its result.

A few years ago the company I am now employed by served notice that every man in their train and engine service would have to stand the eye and ear test. The first note of protest came from the engineers in the shape of an appeal to their ever faithful friends, the firemen, "won't you stand by us and help us to resist the imposition of this test, as it is now proposed by the company." This was read in the B. of L. F. lodges from one end of the system to the other. It was discussed at length—and what was the verdict? Did the firemen say, "We have nothing to be afraid of by any test they can give us. We are young men, and if any one can pass it we can. We can run those engines if any engineers are turned down." Oh! no, the firemen did not say that, but true to their sentiments of loyalty and their manly principle this is what they did say and emphasized it by their unanimous vote: "We will not desert our engineers. We do not want their jobs unless they become vacant in such a way that we can get them honorably. We will stand by them for the establishment of an eye and ear examination that is fair to the engineers, fair to the company, fair to the public, and fair to ourselves." The four Orders united and a joint committee was chosen, the general chairman of the Conductors being elected chairman of the joint committee. We made the fight and were in a fair way to get the test established just as we wanted it when one bright morning the chairman was informed that it was rather strange we should persist so in standing out for our views when the engineers had accepted a test proposed by the company the day previous. Experiences of that kind have a tendency to make men cautious about choosing bed fellows in any campaign.

Let me mention another case which, although involving individuals only, typifies in the light of recent events the disposition of the two organizations towards each other which has been responsible for goading our Brotherhood into assuming the defensive. I am personally acquainted with both the engineer and fireman in this case, and many who read this reference to it will easily identify the parties and recall the incident. A B. of L. E. man burnt an engine and appealed to his fireman thus: "John, you have no one but yourself to look out for. I have a wife and three children—my home is not all paid for—I am in a bad fix, you can help me out. No one else can. You make out a statement that while I was at the office you fell asleep, and when I returned the water was gone and the engine burned. A fireman's job is not much to lose. You can get another job firing most anywhere, but a job running an engine can not be picked up every day. I will stand by you. I will have the engineers' chairman to see that you get back, and the time you lose will be paid by me." Well, the poor fireman signed the paper and as soon as his name was attached to that document the engineer not only broke all of his promises to him, but gave him to understand that he did not care for his continued acquaintanceship. Precisely similar to this is the attitude of the two organizations representing these men—on one side kindness, generosity, self sacrifice—on the other hostility, selfishness and exclusiveness.

The time has come for an understanding and it should be forthcoming, and it must be forthcoming if peace is to prevail between the two Brotherhoods of enginemen. It might as well be understood at once that we can not do otherwise than accept the official statement coming through the chief mouthpiece of any organized body of men that they will fire our engines if we strike for our rights as other than a *casus belli*, and really nothing less than this is the standing law in the constitution of that body of men clearly stating that a man is unfit to sit in their counsels, if he is contaminated with membership in the B. of L. F., for that is in effect exactly what that prohibitory clause in the B. of L. E. constitution means.

A few years ago on the system of which I have the honor to be chairman the B. of L. E. representatives managed to induce the general manager to sign an agreement containing a clause similar to that which they vainly sought to have established on the Great Northern and Northern Pacific, to the effect that engineers could be represented before the officials by the B. of L. E. grievance committee *only*. As soon, however, as he discovered that they were simply using him as an agency to force the B. of L. F. engineers into the B. of L. E. and out of the B. of L. F. he very promptly notified the B. of L. E. grievance committee that the said clause had to come out, and out it came in the face of much bluster, protest and threatening on the part of the said grievance committee.

Let me add in this particular that had that clause remained we were prepared to take the matter into the courts, and one of the most able and prominent lawyers in our part of the country had volunteered his services free of charge and expressed his determination to fight it to the United States Supreme Court if necessary, his contention being that such a clause was in restraint of constitutional rights and the position of the B. of L. E. in the premises untenable. Without doubt had the matter been fought out in the courts there would have been some "trust busting." Will the B. of L. E. as a body benefit from this constant nagging? Is it going to create a better feeling towards those it claims to represent by forcing the B. of L. F. to defend itself against the insults and injustices to which that organization has been endeavoring to subject our Brotherhood? I think not. Nearly every engineer with whom I have spoken freely states that he is opposed to such a policy, as it only creates strife and does no good. If, therefore, no benefit is to be derived from it, why is this insistent warfare kept up?

On the only railroads whose managements have consented to the insertion of a clause in the B. of L. E. agreement giving that organization the exclusive right to represent engineers before their officials, we still continue to handle the grievances of all our members whether they be engineers, firemen or hostlers, so they can claim nothing won. We don't want any strikes on our hands, and a fight with the direct source of the present trouble is far preferable to a fight with any railroad company if they must have it that way. When such a fight is over and some one is declared winner, who can discover any advantage such as increased wages or improved conditions of employment gained on either side? No one. I may be wrong, but I had an idea that Brotherhoods never entered into a fight unless it was to resist wrong or secure justice. I must have been wrong, for now I see money that our engineers and firemen have toiled hard to earn spent by the thousands on a fight forced on us by a Brotherhood, viz., the Brotherhood of Locomotive Engineers. It can be stated without the hope of successful contradiction that it matters not to our various railroad managements what organization handles the grievances of either engineers or firemen so they are handled with clean hands and by men in the same class as the party aggrieved. Let me say right here that there is nothing that benefits the engineer that does not in some way benefit the fireman; if not today it will tomorrow, and so consequently the fireman has naturally more than a passing interest in all that concerns the engineer.

Would it not be a splendid idea, therefore, for both orders to enter into joint conclaves on all roads, make joint contracts and jointly meet the railroad managements in negotiating for the adjustment of grievances, advance in wages or improvement in conditions in any way affecting their employment.

The Order of Railway Conductors and Brotherhood of Railway Trainmen have set an example which could be followed by us with much benefit to ourselves and I might add pleasure to railroad officials. Thus friendly relations would be established and that unity which is a source of strength realized with all its attendant advantages. We would be one family.

We are in reality one family, but by the acts of certain members a feud has been precipitated and we are being drawn to that point where that element must be eliminated or suppressed if the stain of factional strife is to be wiped from our banners. I for one trust that tnat element in the B. of L. E. will see the error of its ways and will extend the hand of reconciliation over the line and join in fighting for that which will benefit the great masses of individuals that constitute both organizations whether they be running locomotives or firing battleships.

If this can not be accomplished and there must be a fight you will find me and all the boys I represent on the firing line, and you can depend upon it that we will keep blazing away as long as there is an echo of a B. of L. E. pop gun heard, and wherever John Hannahan, as Grand Master of our Brotherhood, is willing to lead us there am I willing to follow. How many of the firemen of today will forget Mr. Stone's insult? If that gentleman does not change his tactics the organization that was the pride of P. M. Arthur, Past Grand Chief of the Brotherhood of Locomotive Engineers, will earn the epithet of "Stone's strike breakers" and incur the contempt and illwill of the labor world, which must essentially follow as a consequence of its being contaminated with such an identity. Recently certain railroads in Mexico were tied up for several days by reason of the firemen on a certain road demanding increased wages and improved conditions of employment which they felt justified in striking to obtain. Not a wheel turned on that road for several days, not a fireman would go out. The Government put their Rurales (Ranger soldiers) on engines and protected scabs, and the strike was broken (so it is stated in the press) with their assistance. What an opportunity Mr. Stone has lost in not being present to try his hand at "wheel turning" in our sister Republic! He might have learned the lesson he must learn soon. He can not make his engineers in Mexico scab by any orders in his power to give them. Let us get together before it is too late. We can forget today; tomorrow matters may have gone too far. There must be men in the B. of L. E. that can see where their Grand Chief is leading them, and they must, if they love their organization, have the determination and moral courage to cry "halt."

General Chairman.

This Is What a B. of L. E. Man Has to Say.

I have just finished reading the editorial in the October Magazine entitled, "A Word to the Wise," as well as the article from Bro. Chas. W. Maier, Third Vice Grand Master of the B. of L. F., viz., "The Question of Jurisdiction, or a Victory for the Open Door." Permit me to state that in my judgment every word of argument contained in both these articles is correct, and were it possible for a unanimous expression to be secured from the rank and file of the Brotherhood of Locomotive Engineers throughout our country, I feel confident that the great majority would express themselves as endorsing all that is said therein.

I have been in railway service for the past twenty-three years, eighteen of which have been spent on the deck of a locomotive. I served as a locomotive fireman for ten long years, and joined the B. of L. F. after I had fired nine months and retained my membership all these years, until after my promotion to the position of engineer, which occurred in 1898. Two years afterwards I applied for membership in the B. of L. E., and was accepted, but soon learned that if I wished to become free from the constant danger of expulsion or feel that my B. of L. E. insurance was safe, I must withdraw from the B. of L. F.

Section 27 of that part of the B. of L. E. constitution and by-laws known as "Statutes Governing Subordinate Divisions" says, in part: "All candidates before being initiated into the Brotherhood shall fill out an application for one or more policies in the B. of L. E. Mutual Life and Accident Insurance Association, providing they can pass the necessary medical examination and are not more than fifty years of age. If a member of any other labor organization, he may be balloted for, and if elected, he may be initiated with the distinct understanding that in ninety days after his initiation he must show satisfactory proof that he has severed all connection with all other labor organizations, under penalty of expulsion. Any Subdivision failing to enforce this law shall have its charter suspended by the Grand Chief Engineer."

Section 39 says: "No member of this organization who is in active service shall be allowed to join any other labor organization, except the Order of Steam Engineers, under penalty of expulsion by his Subdivision. But the G. C. E. may grant permission to a member not in active service to join another labor organization when recommended by the C. E. and F. A. E. of the Subdivision to which he belongs."

Prior to the enactment of the foregoing laws, at the Norfolk Convention in 1900, there were a large number of B. of L. E. men who had retained their membership in the B. of L. F. These men were, of course, not affected, as the law could not be made retroactive, so that there are large numbers of men today who belong to both organizations and who can not be disturbed in their membership in either by any act on the part of the other. These men constitute some of the best members of both brotherhoods, and had any attempt been made to force them out of the B. of L. F., it would doubtless have resulted in much commotion and considerable loss of membership to the B. of L. E. The narrow and unwise legislation represented by Section 27 was, of course, intended to apply to B. of L. F. men joining the B. of L. E. after it was enacted. The writer disclaims any feelings of prejudice whatsoever in this matter. My record amongst my fellow employes, both as a fireman and engineer, covering a period of eighteen years, is sufficient evidence of my sincerity and honesty of purpose, as well as proof of my loyalty to the organization in which I hold membership at the present time. My only desire is to see fair play and such legislation enacted as will insure that no man's rights shall be curtailed or encroached upon.

As a locomotive fireman, and a member of the B. of L. F., I was for ten years ever actively engaged in seeking to promote the best interests of the firemen, serving as a member of local and Joint Protective Boards, during which time the representatives of the B. of L. F., of which I was one, frequently worked harmoniously in conjunction with similar committees from the B. of L. E., and the best of feeling ever prevailed between both organizations, all realizing (as all fairminded men should) that the interests of both were mutual. We thus worked along practically the same lines to obtain the same ends. As a locomotive engineer, and member of the B. of L. E., I have taken the same interest in things pertaining to my present class of work as that which characterized my membership in the B. of L. F. when I was a fireman. Being confronted by the obnoxious legislation passed by the Norfolk convention of the B. of L. E., in 1900, I was compelled to make the (to me) great sacrifice of withdrawing from the B. of L. F., after being closely associated with its members for over twelve years. This was indeed a hard blow to me, and I feel its severity all the more when, on looking back through the period of my railroad career as a fireman, the memories of the past assert themselves, and the confidence I enjoyed of many a dear friend and brother who had nobly stood at my side and helped in struggles to obtain recognition for the firemen of those days, are again called to mind. When I think of how we worked and planned, and executed, thus paving the way for those who followed in our footsteps; when I remember the many honors conferred upon me by the B. of L. F. boys of those days, who repeatedly elected me to positions of trust and honor in our local lodge, and to represent them at their conventions, time after time, and then realize that I have been compelled to sever all those connections and associations which in my heart I hold so dear, I feel that the time has come for the common sense and level-headed element in the B. of L. E. to take a stand and call a halt.

I believe that my case is typical of that which occurs to every B. of L. F. man who, after being promoted to the position of engineer, and after running a year or more, makes application for membership in the B. of L. E., and after being admitted to its ranks, and being confronted with compulsory withdrawal from the B. of L. F., must perforce quietly acquiesce therein or suffer the unpleasant experience of having himself and family ostracized and criticised in certain quarters unnecessary to mention.

To attempt to combat this law single handed is to make oneself conspicuous in the effort to maintain personal rights and privileges, and is consequently sure to subject one to charges of being obstinate, contrary, defiant and lawless, besides being made a target for the poisoned shafts of malice and prejudice from those who are so small as to entertain illwill against the individual personally if he dares to advocate a principle to which they are opposed, no matter how clean that principle may be or how sincere he may be in its advocacy. The result is that under this pressure from within and without, particularly in certain localities, one is compelled to submit to the inevitable of withdrawing from the B. of L. F., no matter how much against his desire it may be to do so, provided, as in my case, he finds it necessary to belong to the B. of L. E. in order to have organized representation before his officials.

To continue, the question naturally arises, who is responsible for this legislation in the B. of L. E.? In reply, I would direct attention to Grand Master Hannahan's words addressed to Grand Chief Stone, when in conference in the Northern Pacific jurisdiction case, in which he said "your men" (meaning the B. of L. E. engineers) will not sustain you (Stone) in your position (viz., that of "keeping the wheels turning") if you dared to assume it. Bro. Hannahan was right in his assertion. Statistics go to show that only one out of every thirty-five engineers ever reaches the passenger service, yet passenger engineers largely predominate in representing us in our conventions, and 68 per cent. of passenger engineers represent us on all committees. Those men are from the veteran class in service, and in our organization, and in nearly all cases, never were members of the B. of L. F., and, therefore, do not know anything concerning the workings of that organization, or possess any of the sympathies which one who has held membership therein for a number of years naturally feels. I say it is this class of men, possessing, as they do, antiquated ideas, who dominate and control the B. of L. E. conventions, and have done so for years, and it is they who are responsible for the species of class legislation above referred to, and which I must say is a disgrace to our Brotherhood. Then, again, you meet with fellows who never would join the B. of L. F. when they were firing, but who held off, getting something for nothing for years, until eventually promoted to the position of engineer, when they promptly make application for membership in the B. of L. E., many such soon after their admission being elected to hold office in their division. Do you expect any sympathy from men of this calibre for anything pertaining to the B. of L. F., or any regard or respect for the noble and successful efforts it is putting forth to protect its membership? I should say not. In my experience I have found this to be true: That where you find a B. of L. E. man who has never at any time been a member of the B. of L. F., you will, as a rule, find in him a person of selfish disposition, a narrow-minded egotist and ignoramus, puffed up with a sense of self-estimated importance, and possessing little, if any, standing amongst men. It is but natural to expect from these specimens of humanity such legislation as Sections 27 and 39 of the B. of L. E. Constitution.

The B. of L. E. as an organization should, however, not be judged by such types of men. I am firmly convinced that a great majority of the membership at large does not approve of the presence in our constitution of such reprehensible laws as those to which I refer, and while the time may not yet be ripe for action, I feel certain that at some day not far distant this law will be repealed. The past eight years has seen the most remarkable changes in railway affairs, and the greatest number of promotions from the ranks of locomotive firemen to that of engineer in the history of our country. As the years come and go, the old veteran engineers are being fast thinned out—their places are being filled by young men from the ranks of the B. of L. F., men who have been reared up in a different school of experience, and under existing conditions altogether different from the men of twenty or twenty-five years ago. As a result it naturally follows that as the younger men are called to fill the offices and duties of membership in the B. of L. E., imbued as they are with progressive and liberal ideas, they will take the necessary steps to adjust all matters pertaining to our organization so that it will be in keeping with the advanced and broad-minded ideas of the twentieth century. We can not live on the memory of the glories of the dead past. CONSISTENCY.

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B. of L. E. vs. the B. of L. F.

I have been kept at home on the sick list for a few days, and was, therefore, very anxious to get my Magazine, and upon reading the article entitled, "The Question of Jurisdiction, or a Victory for the Open Door," on page 563, I felt like giving Bro. Smith a word of praise, as well as the rest of the board and Grand Officers, who so nobly assisted what I term the backbone of our Brotherhood. Without representation, recognition and privileges granted to other employes we might as well disband. When our Grand Master placed Grand Chief Stone on record as saying what he did, it shows plainly to us Eastern boys, who are enginemen and still retain our membership in the B. of L. F., that we had better stay where we are and leave good enough alone. Formerly they were called a sister organization, but we now find with such a leader that they are our enemies. So, brothers, beware before you take the step, for an order with such a leader will surely fail.

ENGINEER MEMBER.

* * *

Union Meeting at New Haven, Conn.

Sunday, October 8th, was a day and an occasion not soon to be forgotten by those who attended the meeting of the brothers employed on the Consolidated System of the N. Y., N. H. & H. R. R., which was held in the spacious lodge room of 284. There were large numbers of members present from Lodges 666, 608, 493, 73, 57, 474, 284 and others. Bro. A. P. Kelly, Chairman of the Grand Lodge Executive Board and General Chairman of this system's Board of Adjustment, presided. The meeting had been called to do honor to and listen to an address by our genial and popular general manager, Mr. Samuel S. Higgins. After a few preliminary arrangements had been made, Bro. W. A. Pyle, Treasurer of 284, escorted Mr. Higgins into the lodge room, and, addressing Bro. Kelly, said he not only esteemed it a great privilege, but an honor and pleasure, to present to him, and then througn him to the members of our Brotherhood, Mr. Samuel S. Higgins, general manager of the N. Y., N. H. & H. R. R. Before Bro. Kelly could respond the brothers broke out into a tremendous applause and other demonstrations of pleasure, which must have been convincing evidence to Mr. Higgins of his popularity among the members of the Brotherhood.

Bro. Kelly, in presenting Mr. Higgins, said, among other pleasing things, that he had always found Mr. Higgins, when he understood matters, fair and square in his business relations. It was because he wanted the members of this Brotherhood to learn this fact he had come to visit them today. Bro. Kelly then made an earnest appeal to the brothers to see to it that they act like men, and that they be fair and loyal themselves, not only to this lodge and Brotherhood, but to the company as well. Bro. Kelly received an ovation when he resumed his seat.

Mr. Higgins then expressed his pleasure in meeting with the men, and said, in part, that he had not forgotten the occasion of one year ago or more, when they had given Mr. Kelly such a substantial testimonial when he had made his first visit to them, in company with the other high officials of the company, and that it was a source of much satisfaction to know that the members had not forgotten him. [Applause.] Many things had happened since that occasion of one year ago, and he felt quite sure the men had been benefited by the decisions, and there was now nothing but the spirit of peace in the hearts of all concerned. Mr. Higgins further reminded the brothers that business for the road was looking much brighter. This fall and coming winter the men were likely to be called upon to do more or less extra work, and he hoped they would assist the company in every way possible to handle the increasing business expeditiously.

When the general manager took his seat the boys gave him another voluminous hand-clapping. The meeting then resolved itself into an old-fashioned hand-to-hand talk, the brothers being given the privilege of stating to Mr. Higgins the conditions and troubles throughout the system where they were employed. Many of the boys took advantage of this and were quite frank and outspoken in their speeches. Time would not permit of hearing from others who would have liked to have expressed themselves, and the general manager, owing to another engagement, was obliged to excuse himself, promising the boys that he would take note of what he had learned, and appealed to them to take an interest in their duties, for themselves and the company that employed them. Mr. Higgins then retired amid a perfect storm of hand demonstrations, leaving behind many well wishes for an unlimited measure of success.

It has been written upon the pages of history that there is bound to come a time in the life of every man which will test his loyalty as to whether he is true to his God, his country or any avowed principle to which he has subscribed, and our 400 brothers who subscribed to the principles of our grand old Brotherhood attested their loyalty on this most interesting occasion. The writer took care before the boys left for their homes to ascertain from more or less of them how they enjoyed the meeting and their opinions of Mr. Higgins, and the general answer was that "he is great," or "immense," or "he is all right." So if this is the feeling in the case, let us all renew our efforts, attend the meetings regularly and help personally to increase and strengthen the fraternal bond which unites us all in a common brotherhood, remembering that true worth is in being, not seeming, in doing each day that goes by some little good, not in dreaming of great things to do bye and bye.

W. A. PYLE.

The Toledo Joint Union Meeting.

The Toledo joint union meeting of September 24, 1905, proved a success beyond the most sanguine expectations of its promoters. Fully 2,000 people were in attendance at the public meeting in the afternoon, and 1,500 Brotherhood and other men attended the secret meeting held during the evening. Rev. A. M. Hyde, of the First Congregational Church, opened the public meeting with prayer, and the address of welcome was delivered by the mayor of the city, Hon. Robert H. Finch. The mayor expressed his warm approval of the good judgment evinced by the railroad people in selecting so hospitable a city as Toledo for the place of their gathering, and assured them that they would find open to them the hearts and homes of all its citizens.

Following Mayor Finch, the Rev. Patrick O'Brien delivered an enthusiastic address, expressing his approval of the aims and objects of organized labor, and commending the great work which it is doing for society in general, and its adherents in particular—morally, socially, industrially and economically. He spoke of the references made to money kings, railroad kings, etc., and said he regarded it as somewhat strange that he never heard the expression labor kings used, although in reality labor was the real king, and not money. Money, representing as it does value, is the creature of labor, which produces all wealth. He said that kings of any kind, as far as their usefulness was concerned, were things of the past, and that privileged aristocracy should everywhere give way to the rule of the masses of the people.

Father O'Brien declared that in view of the immense sums being realized from railway earnings, railroad employes were entitled to better pay and greater recognition for the faithful performance of their dangerous duties, not only on behalf of their employers but also of the public. His address was characteristic of him, as he is recognized as a sincere advocate and determined champion of the rights of those who toil. In conclusion the reverend gentleman jokingly expressed a hope that he would not be deprived of his half-fare privileges because of the open manner in which he expressed his views.

Our worthy Grand Master, Bro. John J. Hannahan, was introduced at the conclusion of Father O'Brien's remarks, and delivered a very interesting address. Bro. Hannahan referred to the days when he was firing, and by comparison showed the vast improvement in the character and condition of railroad men of today over that of those of twenty-five years ago. He stated that the railroad men of today are as a class honest and respected, whereas before the railway organizations were thoroughly established most railroad employes drank, and a large per cent. of them did not take the trouble to settle their bills. He said at the present time a garnishee was a very rare occurrence, whereas in the days to which he referred it was usual. He dwelt upon the great necessity existing for the enactment of legislation looking to the protection of railroad men and their interests, and said that if all the railway employes of Ohio were to vote unitedly they could elect a legislature that would insure them fair treatment. He said that the time was not far distant when organized labor would act as a unit on matters pertaining to the advancement of the rights of its membership. Bro. Hannahan appealed to the ladies to aid in the establishment of the principles of organized labor. He dwelt upon the fact that some men go along without ever contributing one dollar or making the slightest effort to assist in carrying out the plans of labor organizations, but will continually and gladly accept all the benefits in the matter of increased wages and improved conditions which can be secured from such a source, thereby getting something for nothing. He suggested that married women having husbands whose occupation is represented by a labor union which it is within their power to join, should lay down the law and show them their duty as men, and also that no young lady should keep company with a man who is not a member of the union in which he properly belongs.

In the absence of Bro. P. H. Morrissey, Grand Master of the Brotherhood of Railroad Trainmen, Bro. T. R. Dodge spoke in behalf of that organization. He dwelt upon the necessity of workingmen organizing to protect their industrial rights, and spoke of the great advantages thus far gained through organized effort. Speaking of railroad men in particular, he referred to the high standing which they at present occupy in the estimation of their employers and the public alike, and attributed same to the work of their orders and brotherhoods. He also said that the trainmen were responsible for the safety appliances in use for the protection of employes and the public.

Bro. A. B. Garretson, Assistant Grand Chief Conductor of the Order of Railway Conductors, represented that organization in the absence of Bro. E. E. Clark, Grand Chief Conductor. Bro. Garretson during the course of his remarks dwelt upon the wise conservatism which characterizes the methods of railway labor organizations, and the substantial benefits enjoyed by all interested through their following such a course. He said that none of the railway orders or brotherhoods could be accused of making unreasonable demands, and that when they sought concessions they were fully justified in so doing from every standpoint.

In the absence of Grand Chief Bro. W. S. Stone of the B. of L. E., Bro. Futch spoke for that body. He reviewed the history of the Brotherhood of Locomotive Engineers from 1863, when its meetings were held in secret in box cars, until the present day, and stated that during that period his brotherhood had paid out over $14,000,000 in insurance claims.

Bro. T. M. Pierson, Second Vice-President of the Order of Railway Telegraphers, represented that organization, and in his remarks referred to the fact that the engineers, firemen, conductors and trainmen had impressed the audience with the importance of their respective duties, but that all of them had to wait on the operator. He referred to the nerve-racking character of the work of the railway telegrapher, and urged that the early training of the youth of the country should include a course on the benefits of unionism, just as the principles of politics and religion were taught. This, he said, would insure organization amongst the masses of the people at all times.

The Brotherhood of Railway Clerks was represented by two speakers, Bro. A. H. Britt, of the Toledo Division, and Bro. J. P. Kilrain, of Cleveland, Ohio. These gentlemen spoke of the vast amount of good which had resulted from their organizations to the members thereof, as well as to their wives and children. Bro. Britt said that it was a fact that at the present time hundreds of clerks were working fourteen hours per day for much less pay than employes in other branches of railroad service were receiving. He referred to their limited opportunity for advancement, stating that promotion in their line was based more on pull than merit, and expressed the belief that his organization would eventually remedy these evils. Bro. Kilrain endorsed all that Bro. Britt had said. The meeting was then closed with benediction by the Rev. Father O'Brien.

One of the principal topics of discussion during the secret meeting which was held in the evening was that of system federation. The consensus of opinion was that it was about time that the train service organizations were united, particularly on the larger systems. Many old acquaintances were renewed at this meeting, and it will without question prove most beneficial to the interests it was intended to advance.

The visiting ladies were entertained during the evening by the several ladies societies of Toledo in the annex of Memorial Hall, one of the finest halls in the city. A fine program was rendered, and ice cream and cake were served. Sister W. A. Murdock, Grand President of the International Auxiliary to the B. of L. E.; Sister Georgia M. Sargent, Grand President of the L. S. to B. of L. F., and Sister Ray Watterson, Grand Mistress of the L. A. to B. of R. T., were unavoidably absent, Sister Murdock being ill. Sister Murdock's place was filled by Sister Mary Robertson, of Toledo, secretary of the insurance department of the Grand International Auxiliary. Sister C. H. Covert, of Toledo, presided, giving the address of welcome, after the opening prayer had been given by Sister R. J. Cantrick. Brief addresses were given by Sisters Robertson, Moore and Cassell. A piano solo by Clara Cook was greatly enjoyed, as was a recitation by Sister J. H. Lindsay. Others taking part were Miss Arline Sitlington, who gave a mandolin solo; Mrs. Stella Tripp, who gave an enjoyable recitation; Misses Edna Watson and Johanna Prann gave pleasing vocal solos. The addresses, which treated of the affairs of the various societies, showed that everything was in a hopeful condition. Sister Edna Watson, whose splendid singing was a feature of the program, had the honor of representing the largest lodge in the world of the Grand International Auxiliary to the B. of L. E., viz., Lodge 57, of Toledo, Ohio. As stated above, at the conclusion of the exercises refreshments and a social hour were enjoyed until the conclusion of the brothers' secret session.

C. E. Starkey.

Joint Protective Board, D. & H. System.

In pursuance to a call the Joint Protective Board of the D. & H. system met at Keller's hotel, Albany, N. Y., October 2, 1905, for the purpose of electing officers and transacting such other business as might be necessary for the benefit of the men whom they represent. After being called to order by Chairman Thos. E. Ryan, Bro. C. A. Wilson, First Vice Grand Master, was admitted and introduced to the members present on our board, many of whom had never had the pleasure before of meeting with a Grand Lodge officer. It was indeed a great pleasure to have one with us who was able to give the good advice he did to the members of our board, who had never before been elected to fill office at a joint board meeting. To say that the brothers present will profit by the advice and encouragement given to them by one who has had the experience that our worthy First Vice Grand Master has had, was plainly seen by the manner in which business was conducted at this meeting. Bro. Wilson's presence was unexpected, as he had only heard of our meeting the day previous while attending a union meeting in Oneonda, N. Y. The presence of our worthy Grand Master was expected, but at the last moment Chairman Ryan received notice that on account of Bro. Hannahan being detained he would be unable to meet with us, but expressed every desire that our meeting would be a successful one for all concerned.

Bro. Thos. E. Ryan, of Lodge 71, who has served the board so successfully for the past number of years, was re-elected unanimously to fill the office of Chairman. Bro. Thos. Whalen was re-elected to fill the office of Secretary and Treasurer, and Bro. Leon Lown, of Lodge 56, was elected to the office of Vice Chairman. There was also elected at this meeting an executive board composed of the following brothers: W. F. Voeglin, of Lodge 227, Chairman; John M. Pennefeather, of Lodge 71, Secretary; and Bros. W. E. Austin, of Lodge 209, W. C. Carr, of Lodge 315, and R. Emery, of Lodge 228, were also elected as members of the executive board.

Before the adjournment of our meeting, Bro. T. M. Pierson, Vice President of the O. R. C., was asked to address the meeting, which he consented to do. In a few well chosen remarks he reminded us of our duty towards one another and also of the meaning of unionism and federation, and along the lines in which it should be carried out to make a success of it.

MEMBER.

* * *

Now is the Accepted Time.

No fireman who has served long enough as such and is otherwise eligible to membership in the Brotherhood of Locomotive Firemen should hesitate a moment to secure the protection for himself and those dependent on him which our Order affords. No man knows when his final summons will come, and should, therefore, take immediate steps in the matter of making provision for his family in the event of his death or his being rendered unable to make a living for them. That "now is the accepted time" has been forcibly and sadly demonstrated in the case of Bro. Chas. F. Lenk, of Safety Lodge 142, Toledo, Ohio. Bro. Lenk was admitted August 27th. His beneficiary certificate is dated September 1st. He paid his first quarter's dues September 28th, signed his certificate at 10.30 a. m., October 5th, and met sudden death one-half hour afterward. He was killed by being knocked from the top of a freight car, which he was riding between Toledo and Air Line Junction, being struck by an overhead bridge. Bros. W. D. Barry and C. E. Starkey were sent by his lodge to accompany the remains to his home, Olmsted Falls, Ohio.

By the timely performance of his duty in joining the Brotherhood, Bro. Lenk left his father assistance (which death prevents him from rendering) in supporting his eight young brothers and sisters, besides lifting the financial burden which those already broken-hearted by his death would have had to bear had he not made provisions therefor. There are men who are the only support of families—their own wives and children—who have been firing engines over nine months, and have not yet made application for membership in the B. of L. F., and who are without a dollar of insurance. As the case of Bro. Lenk so clearly exemplifies, it matters not how short a time a man is a member, whether it be for one-half hour or 25 years, should he be called by death, his beneficiaries will receive the full amount of his policy just the same.

C. E. STARKEY.

The Boomer Fireman.

Again let us take up for inspection and hoped-for improvement our "boomer" brother who labors under the impression that the Order owes him a living as long as he can't get a pension job. We all know he is a detriment to the Order. He has a false idea of life and its responsibilities. Why should he come along with his swagger and talk, and demand of a hard working brother, who is toiling and saving to support a wife and babes, or a mother and sisters, the price of a meal, or more? It is true we should show charity to our brothers, but charity means to help those who can not help themselves. Now, if a brother is in good health there is no reason why he can't make sufficient to pay for his meals. Do other men of other trades travel about the country penniless? If they do they are classed as tramps!

There is plenty of work nowadays at one thing or another, and any self-respecting man will work at most anything before he will acknowledge he is unable to make enough to feed himself. We know the brother who feeds the boomer is greatly imposed upon, and for that reason all lodges should have a relief fund, made from regular assessments when necessary, to support this class of our Order as long as they exist. Then such expenses would fall equally upon all members, which would equalize and lighten the burden.

The railroads are making a hard fight on the "floater" as to employment, transportation, etc., and the result is the steady man who has met with misfortune and is trying to get on his feet again comes within this class unjustly. I would like to see this element eliminated, or at least reformed, and if our next convention would take it up and make such members carry a cash credit in their lodges, or make their lodges pay their "booming expenses" by issuing them "letters of credit," for which they would be liable, this problem would soon solve itself to the welfare of our Order and in justice to all. There are many ways in which this can be overcome, and I hope to hear from the brother again.

Member.

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Keep a Smile on Your Lips

(Written specially for the Magazine by a superintendent of motive power.)

Keep a smile on your lips and be happy,
Though your life may be fettered with
care,
And the clouds gather darkly around you,
The sunshine will be bright over there.
Success all depends on your efforts,
And the friends you will make on your
way,
Every one of them willing to help you,
If you are only happy and gay.

Keep a smile on your lips and be happy,
Though your heart may be aching with
pain,
And ne'er let the world know your troubles;
There's always sunshine after the rain.
And your friends, no matter how humble,
Will take cheer from the smile on your
face,
And wish you good luck on your journey,
Say! I hope you win out in the race.

Keep a smile on your lips and be happy,
Though the race may be hard and you
lost,
The excitement and effort in trying
Is usually worth all it cost.
Then smile although you're defeated,
And others have led you the pace,
Keep smiling until you attain it,
And when looking grim death in the face.

Keep a smile on your lips and be happy,
Though you're leaving all that you love,
And the friends that you leave here in
sorrow
Will think of you smiling above.
So that when they cross the dark river,
You will stand on the opposite shore
With a smile on your lips there to greet
them,
After their life's work is o'er.

Missabe.

T. Wood, 468,
B. L. E.

A. Carru
B h, 292,
L. E.

J. Carden, 62,
B. L.

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W. Grady, 152,
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Geo. Baker, 29
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E.

Geo. Kennedy, 560,
B. L. E.

I. C. Wallace, 232,
Chmn. B. L. F.

JOINT PROTECTIVE BOARDS OF ENGINEERS AND FIREMEN, N. Y., O. & W. R. R.

In the Field

First Vice Grand Master.

I left Phillipsburg, N. J., August 4th, on one of the handsome trains of the Lehigh Valley, bound for Salamanca, N. Y. Upon arriving there I was met at the depot by Bro. John Clifford, of Lodge 326, who gave the information that a hall could not be secured for the purpose of organization until Sunday evening. This being the case, I arranged to go to Bradford, Pa., where I visited Lodge 326. A good meeting was held, and the activity of the following brothers in the lodge's affairs was very conspicuous: Bros. J. Clifford, E. L. Hall, C. E. Vibbard, D. E. Brine, J. T. Sullivan, A. L. Ambrose, W. Fairbanks, F. A. Robertson, J. J. Reiley, and W. J. Eckhardt. It is a pleasure to report the lodge in good condition. Bro. William Fairbanks takes his usual interest in the lodge, though no longer in the railway service.

Upon my return to Salamanca we succeeded in organizing Lodge 681. During my stay I had the pleasure of meeting Bros. J. Collins and C. W. Burdell, of Lodge 169, who report their lodge in excellent condition.

Bros. C. Halbrook, W. Rozell, W. H. Smith and C. Collins had a successful fishing trip to Lake Consus. We regret that our work was such that we could not accompany the brothers.

I take this opportunity to thank the following brothers for valued assistance in perfecting the organization of Lodge 681: J. J. Reiley, of Lodge 326; William Baxter, M. E. Gruver, H. B. Smiley, of Lodge 557; D. G. Razer, P. Sherman, J. Moroney, of Lodge 169; C. S. Hale, W. J. Welsh, Charles Kruger, of Lodge 207; Henry Ehrle, of Lodge 316.

The goat was furnished by the members of Lodge 557, and the way he operated upon the candidates was a credit to his capricious nature. His name is "Billy Baxter." Members of Lodge 681 say the latch string of their lodge-room door always hangs on the outside for all members who are in good standing.

After the organization ceremonies were completed, we were invited to the Phoenix Hotel, and there sat down to a feast that would do honor to the crowned heads of Europe. It is useless to say that full justice was done to all of the good things served.

Bidding the brothers good-bye we left for Toronto, Ont., to attend the union meeting held under the auspices of Lodges 67, 262 and 596. The meeting was a success in every sense of the word. All the Lodges in Canada were represented, as well as quite a number from the States. Some of those whom I recall are: R. E. Quirk, of Lodge 149; A. V. Howard and C. Halbrook, of Lodge 169; W. Kinney, of Lodge 476; A. P. Kelly, of Lodge 284; Fred Macgregor and A. Hale, of Lodge 485; F. A. Symonds, of Lodge 73. All the visiting brothers were loud in their praises of the generous hospitality extended them by the Canadian brothers. The committee that had the matter in charge certainly deserve special commendation for their untiring efforts to entertain the visitors. There was not an idle moment in the whole program, for the committee simply kept everything and everybody moving.

The Ladies Society was ably represented by Vice-President Mrs. Maude Moore, Mrs. E. A. Ball and Martha J. Cameron, who gave a very interesting history of the Society, and thoroughly explained its aims and objects.

While in Toronto, in company with Fourth Vice Grand Master E. A. Ball, we visited Lodges 262, 67 and 596, all of which are in excellent condition, and the members working faithfully for the good and welfare of the organization.

From Toronto we went to Nescopeck, Pa., where Bro. H. F. Yeager was examined for the allowance of his disability claim.

Returning to Hazleton, Pa., we had the pleasure of meeting with Lodge 507. While you don't hear much from the members of this lodge, Bros. Charles Bodine and A. Kechner say that Lodge 507 is still at the head of the list, and that a warm welcome always awaits any brother who comes that way.

While at Hazleton I worked with the Lehigh Valley Joint Board, composed of the following brothers: C. Bodine, of Lodge 507; C. Anderson, of Lodge 496; James Nicholson, of Lodge 351; C. Barrett, of Lodge 472; W. Luckenbell, of Lodge 384; W. Shellenberger, of Lodge 211; James Downs, of Lodge 379; C. A. McCarty, of Lodge 436; H. J. Reiley, of Lodge 11.

Bro. Reiley, as treasurer of the board, presented his report, which was one of the best and most complete reports I have ever heard read, showing the financial condition of a Joint Board. I consider the Lehigh Valley Board one of the best in the organization.

I very much regret that I did not have the opportunity of meeting Bros. A. C. Yocom, C. F. Conahan, C. J. Weigand and John McGroaty, of Lodge 507, while visiting their lodge, and hope to have this pleasure at a regular meeting in the near future.

My next stop was at Harrisburg, Pa., where I attended a picnic under the auspices of Lodge 673, and Ladies Society No. 60. A splendid day was spent by all who enjoyed the privilege of attending.

My next stop was at Sunbury, Pa., the home of 220. Here I met the following brothers: G. A. Stahle. W. Z. Conrad, A. J. Townsend, F. K. McNeely, J. P. Jones, F. Dunkelburger, C. F. Gatschall, J. P. Haughawont, C. A. Cooper, George Hover, George Young, C. E. Rooker, A. Kurts, B. Byers, J. Bachman, Frank Miller, C. Freeburn, H. W. Schoofstall, John Fox, C. Lerch, W. C. Henry, C. Kaller.

In the evening a banquet was held at the home of Bro. and Sister Beaver, and the following members, with their wives, were present: N. E. Weaver, Mrs. J. Brownwell, Mrs. J. Dreen, K. Golden, E. F. Simcox, F. Dunkelburger, J. P. Haughawont, F. Miller, C. A. Cooper, John Drum, C. F. Gatschall, J. P. Jones, W. Z. Conrad, A. Kurts, J. Bachman, George Stahl, and candidate E. W. Shaffer. A most pleasant evening was spent and all felt that it had been good to be there.

Bro. N. E. Beaver has the sympathy of the members in his illness. J. Drum wishes it understood that he can make lemonade and coffee on the same stove.

My next stop was at Jersey Shore, Pa., where is located Lodge 418. Here I met the following brothers: John Raymer, F. H. Heinbach, J. H. Hill, Chas. Tiebathe, R. E. Nagle, A. D. Helm, J. R. Custer, W. C. Myers. It affords me pleasure to say that these brothers are working with that degree of zeal and earnestness so characteristic of true Brotherhood men.

My next stop was at Clearfield, Pa., where I found Brothers G. P. Kalbe, George Conklin, I. T. Lasch, W. W. Robinson, D. B. Stine, W. L. Ammerman, C. A. Ammerman, W. Jordan and Frank McGill enthusiastically working for the best interests of their lodge and the Brotherhood in general.

While at Jersey Shore I was shown what is called the gold medal engine, No. 2333, of the New York Central and Hudson River Road. The boys say she is a "hummer" on coal, and that a fireman should have about five dollars per day for firing on an engine of her size.

In my next letter I shall mention other lodges and members visited, the account of which is necessarily omitted from this letter.

C. A. WILSON.

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Third Vice Grand Master.

After finishing up my work at St. Paul I took a run home for a few days' rest, after which I started out to answer the many calls that were awaiting me. My first stop was at Denison, Texas, where I took up some matters pertaining to the welfare of the members of Lodge 8. There are not many old-timers in this lodge now—mostly all new members. Time makes changes, and it certainly has in Lodge 8.

While passing through Ft. Worth and waiting for my train to depart, I had the pleasure of a visit with Bros. Mann and Douglass, of Lodge 83. These two brothers are amongst our best, wide-awake members in Texas. They are up-to-date in all Brotherhood matters, and it is a pleasure to meet and do business with them. Lodge 83 is one of Texas' oldest and best lodges, and her members are progressive.

I had to pay Big Springs a second visit in a short space of time. My last visit was to examine Bro. Stinson for locomotor ataxia. I found him in a helpless condition. I had to go via El Paso in order to reach Del Rio, and while in the former city had the pleasure of holding a good meeting with Lodge 135. I was met at the train by Bros. Bedford and Ambreson, who saw that I had care while with them. Bro. Fred Barr and wife arrived in El Paso about the time I did, and I had his company also. I held one of the best meetings in El Paso on my last visit there that it has been my privilege to hold in a long time. I found the lodge in good condition and everybody happy. I also met Bro. Hugh Shields, who came down from Alamagordo to see me. Bro. Shields is General Chairman of the El Paso and Northeastern, and a man who knows his business. I was accompanied by Bro. Barr to Del Rio and San Antonio. My mission to Del Rio was to examine Bro. N. Wallace, of Lodge 154, on account of consumption of the lungs. I found the brother in the last stages of this disease and in a helpless condition. He is cared for by a devoted wife. I held a good meeting while in Del Rio; in fact, one of the best I ever held, with Lodge 546. The membership of this lodge is small, and there is scarcely any material to draw from, which makes it hard for the lodge to grow in members. I am very well pleased with the way things are moving along in Del Rio. Del Rio is situated in southern Texas, on the banks of the Rio Grande River, which divides the United States from Old Mexico.

My next stop was at San Antonio, where I examined Bro. Cambridge, of Lodge 263. While in San Antonio I held a joint meeting between Lodges 145 and 263 and the Ladies Society. The meeting was not largely attended, owing to the members being out on the road. I found the lodges all right and doing business at the old stand as usual.

While on my way north I stopped off at Smithville and spent awhile with the members of Lodge 492. I found this lodge moving along very nicely and everything serene with them.

On September 30th, in Cleburne, Texas, a conference was held between President Kendrick, General Manager Nixon, the Engineers' committee, and Bros. Burke and Rodgers, relative to seniority cases. The conference lasted about five hours, and was spirited from beginning to end. At this time we do not know the results, but can guess at them pretty well. I am thankful to Bro. Chas. Rogers, General Chairman of the Gulf, Colorado and Santa Fe, for many kindnesses shown me while in Cleburne. Bro. Thomas Burke, General Chairman and member of the Grand Executive Board, assisted me in an able manner, and to him I am under many and lasting obligations. While in Cleburne several good meetings were held, and much good should result from them. We had the pleasure of a visit from Bros. Joe Myers, of Ft. Worth, and John Ward, of Longview, Texas. Bro. Myers is a rising young attorney of Ft. Worth, also legislative representative of Texas, while Bro. Ward has the honor of being General Chairman of the Texas and Pacific Railway, and member of the House of Representatives of his state. It is a pleasure to meet these two brothers, and I always appreciate their presence. I do not happen to have very much news at this time, but hope to be able to do better in my next letter. The outlook for the Order is good. I hope to have three new lodges organized by the time my December letter goes to press.

G. W. MAIER.

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Fourth Vice Grand Master.

On September 1st I attended the regular meeting of Lodge 471, at Bridgeburg, finding it fairly well represented, and that landmark, Bro. Alex McIntyre, in the same position he has occupied for a number of years, and likely to fill for many more. This lodge is in first-class order, and that is all to be desired.

The following day I went to Niagara Falls, to meet with the members of Lodge 487, but found them nearly all on duty without any extra men available. However, when I met with that well-known and thorough Brotherhood man, Bro. James Rhynd, who gave me a good account of his lodge and its finances, I could not but believe that I had met the standard bearer of the B. of L. F. in that city.

I attended the regular meeting of Lodge 151 at Hamilton, finding a good attendance, candidates in waiting, and all lodge matters up-to-date. With the present efficient officers and the eagle eye of Bro. W. J. Dore looking after its finances, this lodge could not be otherwise. The members employed on the T., H. & B. speak well of their officials, as they have given them a fair and reasonable schedule.

On arriving at Toronto on Labor Day, in connection with some work I had in hand, I could not help but feel a certain amount of pride when I looked upon that large procession made up entirely of union men, which took over one hour to pass a given point, and then to compare it with some years past, when it was almost considered a criminal offense to belong to any union or assembly of working men.

On going to London, I met with Lodge 117, at their regular meeting, and found them doing business at the same old stand in a business-like manner. Some of the older members have withdrawn, but the younger men are joining rapidly and successfully carrying on the work as in times past. The future of this lodge is very bright.

Stopping off at Delray to meet with Lodge 532 in regular session, I spent a very pleasant and profitable evening, as there was a large number present, and a candidate initiated in a manner that will make an impression on his memory for several days to come. I could not help but compare this meeting with one I attended over three years ago, when the members were almost afraid to let it be known that they belonged to the organization, and now nearly every eligible member is enrolled, with a good financial balance on the proper side of the ledger.

At Cadillac I found the members of Lodge 576 badly scattered and almost impossible to hold a meeting, but with the change of time card on the I. R. & I., the excellent set of experienced officers and the contemplated changes about to take place, there is every reason to believe that the future of this lodge will be brighter than ever before in its history.

On going to Palmerston, I had the pleasure of meeting with Lodge 181 at their recent session, and shaking hands with a good representation of its members. This is a lodge that is seldom heard from, but when it comes down to regular attendance, lodge work and constitution carried out to the letter, it will compare very favorably with other lodges more frequently heard from. If any visiting brothers happen to be in that locality they would certainly be made welcome at their meetings, and no doubt obtain some useful pointers for their benefit.

After a few days at home I went to Montreal and met with the Grand Trunk Joint Protective Board, which had been called there by the officials of the road to arrange a new schedule, as the old one expired on October 9th. It is to be hoped that the officers of this system will recognize the worth of their engineers and firemen by granting them a rate of wages and other conditions on the same basis as has been agreed upon on lines with which they are in competition. For personal reasons I am removing from Stratford to Brantford, which is forty miles distant and on the same line of railroad. Please note change of address.

E. A. BALL.

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We Do Not Care

We do not care what the world may say
If those whom we love are true;
We do not mind the toil of the day,
If we know in the dusk and the dew
There waits some one who will welcome us,
As we come home to rest;
Some friend who will say "dear heart, I know,
That today you have done your best."

We do not mind if the thorns are sharp,
Or the pathway is rough and steep;
We do not mind if we plow and sow
For others to come and reap,
If we can but hear when the twilight comes
And the red in the west grows gray,
Some dear voice whisper these words of cheer,
"You have fought a good fight today;"

For the heart don't care what the world may say
If those whom it loves are true,
For 'twas ever and always the heart's own way
To long for, and love and rue;
You forget the gain, the loss and the pain,
That tortures your pulsing breast,
If there's one who always in sweet, blind faith
Can say, "You have done your best."

—Member.

Correspondence

Notice.

All letters or communications intended for publication in the Locomotive Firemen's Magazine must be accompanied by the name of the writer. If the writer of an article for publication desires that his or her name be withheld, such request will be complied with, but the correct name and address of the writer must be furnished this office as an evidence of good faith, otherwise no attention will be paid to same.

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Lodge 240—(J. W. Rosler, Jackson, Mich.) On behalf of Lodge 240 I desire to make reference to an incident which, although now sometime past, has not yet lost its interest. That incident was the celebration of the 4th of July, in which a genuine and successful wreck was designed and carried out with two brothers of our lodge as the chief actors in the drama, viz., Bros. Stoddard and Wilkes. One of our newspapers referred to the matter in its columns as follows:

"The management and all concerned in the big Fourth of July celebration in Jackson are to be congratulated on the success of the affair and the execution of the program. The great sensation of the day was, of course, the collision of two big locomotives and this was carried out to the letter.

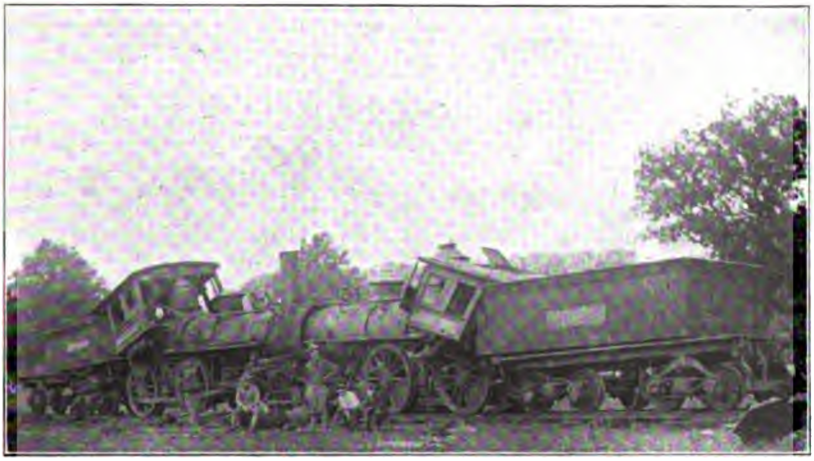
"* * * For hours before the time set these engines were in the hands of Engineers Warren Stoddard, of the Michigan Central, and Thomas Wilkes, of the Grand Trunk, and had they been preparing for a fast run to Michigan City they could not have watched the steam gauge or been more anxious to have everything right. They deserve credit for their splendid work for in their hands largely was the key of success, and they made it.

"As 5 o'clock drew near both men coaled up repeatedly and soon the blow-off began to hiss a sound which is music to a fireman's ears. And the hissing was good and plenty, for let it be known these old-timers had lots of life left in them if they had been robbed of their bells and brass work and to show that they had life they were paced back and forth just like horses preparing for a great race. The track, too, was perfect, and if there were any Jeremiahs present their prophecies could not be worth the breath it takes to croak.

"The great crowd had to be gotten out of harm's way, and for this purpose there was a detail of soldiers who did the work good naturedly and it was an obedient crowd.

"When the signal to start was given by Capt. Sparks waving a white flag, both engines went to the extreme ends of the track. Then there were three distinct whistles and the fatal moment came. So still was the crowd one could hear the heart beats.

"Puffing, puffing, came the iron monsters, and at the south end Engineer Stoddard had jumped early—wise man, too but Engineer Wilkes did not have such a good chance to jump and when he did get it he rolled over and twisted his ankle.



PREARRANGED FOURTH OF JULY COLLISION AT JACKSON, MICH.

A wreck picture that can be contemplated without figuring on somebody getting "days" or worse for it

"On came the steaming engines and they had space enough to get up speed of about 20 miles an hour. That was enough, or proved enough to cause the prettiest smashup in a head-end collision one would wish to see. They looked as though they might pass, but it was only one track and the next moment there was a sight that can not be told in words. Wilkes' engine ran right into the end of Stoddard's and her smokestack was thrown several yards distant, the top of the steam chest further away, and both cylinders were twisted into a mass of old iron. The cabs and tenders of both came into each other, showing that had there been any person on either engine it would have been all day with them, for the cabs were a shapeless mass. On the Wilkes engine the big tender shifted four feet and water poured out of it like a tub losing its bottom. Stoddard's engine was so 'busted' that steam came pouring out of it in a deafening roar. The crowd went frantic for a minute, for it was a huge success.

"The guards had to holler 'stand back,' and the officers issued special orders to keep them back for there was a chance of a big explosion. For 15 minutes the crowd was kept at bay; then the danger passed and thousands made a rush to the scene and hundreds picked up mementos in the way of pieces of both engines to carry away and talk about in years to come.

"It could not have been a greater success. The collision was witnessed by many mechanical engineers, among them Master Mechanic McBain, of the Junction shops, Assistant Chief Engineer Bronner, and others, who came from Detroit for the express purpose of witnessing the collision."

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Lodge 416—(Member, Mahoningtown, Pa.) We have a membership of nearly 100 members. Our goat has been working overtime for the past few weeks. We are on the Erie and Ashtabula Division of the Pennsylvania Lines West of Pittsburg. Business has been very good here during the entire summer. Several of the boys have been promoted to the right side. We have some very good engines here to fire, and they are in the pool, first in, first out. This lodge meets the first Sunday of each month, at 1 p. m. and the third Thursday at 7:30 p. m. Our officers are very able and efficient, and are always working for the betterment of the Brotherhood. They are, H. H. Edwards, Master; H. F. Bowers, Vice Master; H. D. Lackey, Secretary, and J. C. Fox, Collector and Treasurer. On September 7th train 34, from Stonesboro to this city, in charge of Engineer L. C. Maskev and Fireman W. J. Cannon, and an excursion train in charge of Engineer J. B. Popham and Fireman S. D. Cox, came together in a head-end collision about eight miles from this city near Wilmington Junction. Engineer Maskey and Brother W. J. Cannon met with instant death. Engineer Popham now lies in the hospital in a precarious condition. His fireman escaped with a badly wrenched shoulder. Several of the excursionists were painfully bruised. It was a very foggy morning and they met on a sharp curve and the men had little chance for their lives. The engines are in a very badly damaged condition.

Bro. Cannon was a resident of Stonesboro, Pa., and had been a member of this lodge for about three months. He was twenty years of age and leaves, besides parents, brothers and sisters, a wife and one child to mourn their loss. Owing to the mutilated condition of the body the funeral was held the next day, the following brothers being in attendance and acting as pall-bearers: H. H. Edwards, H. F. Bowers, H. D. Lackey, J. C. Fox, W. M. Greenwood and R. D. Reed. Engineer Maskey was a member of Division 565 B. of L. E., and leaves a wife and one baby girl, besides parents, brothers and sisters to mourn their loss. This catastrophy has cast a gloom over the entire community where the men were both well known. The exact cause of the wreck is not known as yet. We would like to have some of the Grand Lodge officers visit us some time in the near future.

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Lodge 448—(Member, Cumberland, Md.) It is with great sorrow that I write of the death of our late brother, William Watkins, who met his death August 10, 1905, on the W. V. C. & P. R. R. near Hendricks, W. Va. Bro. Watkins had been promoted about two years ago, and had run out of Cumberland for a year. He was then sent to Elkins and ran from there to Thomas. On August 10th he left Elkins and went to Thomas. On his return trip going down Black Fork his train, composed of forty cars, got beyond control and rushed down the mountain at lightning speed; twenty-eight of the cars were piled high in the air, and out of this number six or eight cars were all that could be saved. One feature of the wreck was that the two cars behind the engine stayed on the track, broke loose and went down the mountain grade a distance of three miles near Hendricks. It overtook a freight and landed in the caboose, hurting two or three trainmen on that train.

Bro. Watkins was a single man, his father and mother living in England. He had been in this country eleven or twelve years, and was twenty-eight years of age. He had been a member of the Joint Protective Board for two years on the system he worked on, and had been a member of Lodge 448 since March 19, 1900. The only known relative he had in this part of the country was an uncle living eighteen miles west of Cumberland, Md., at Hyndman. As soon as this sad accident occurred Bro. H. B. Martin, Master of our lodge, secured transportation and several of our members went to Elkins and took charge of the remains and did everything possible to find his people. After a delay of twenty hours we finally located his sister, Mrs. Alice Hayward, Seattle, Wash., who is named as beneficiary in his policy of $1,500. The distance being so great she wired us to bury him here, and as his uncle was desirous of having the remains brought to Hyndman and placed in the family burying ground, we took them to that point. The funeral services were conducted by our lodge. Transportation was granted over the B. & O. R. R. for all. I wish to thank the brothers of Lodge 407 for their earnest help in locating his sister. To the bereaved relatives we extend our heartfelt sympathy.

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Lodge 647—(W. F. Gallagher, Blairsville, Pa.) We were organized on August 27th last, and at our first regular meeting we had thirty-four charter members, twenty-five on transfers and nine on application. Our officers and members of boards were all present excepting four, and they were out on the road. I would like to know where there is a new lodge that can beat it. I was Secretary for nearly ten years of Lodge 347 and was a frequent visitor, through writing to the Magazine office. I will come again now, since I am behind the desk for Lodge 647. I still find the B. of L. F. good enough for me.

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Lodge 208—(Member, Susquehanna, Pa.) Our lodge at present is in a flourishing condition. Bro. James Madigan is a fine-looking fellow behind the baby wagon and seems to be able to handle it with the best of care. Bro. Balmer has been on the sick list for several days. The new large engines and the warm weather do not seem to agree with the boys. The new ashpit at the roundhouse is very near completed. They are making more room in the house for the large engines. Bro. Creggin is hustling to get all little grievances straightened out. Bro. C. H. Rose is nursing a sprained ankle, caused by a fall from his engine one day last week. Bro. James Griffin's condition is not very much improved and he will have to go to Jersey City for treatment this week. We hope to see him on the Flyer again very soon. Any time, brothers, that you may happen to come this way, why just make yourself known and you will find some of the old reliable boys waiting to greet you.

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Lodge 679—(Member, Black Rock, Utah.) No doubt the readers of the Magazine would like to hear from this new lodge. We were organized on June 27th, with 20 charter members and now are in a prosperous condition with a membership of 40, and still have 10 applications to look after. All the new brothers employed are transferring at once, as they see that it is to their interest to join the lodge on the system on which they are employed. There are but two lodges on this road, but we hope to have another at Las Vegas pretty soon. As this is the end of our division, and the California Division joins there, it would be a fine place for a lodge. This would give the boys on the California Division a chance to know a little about Brotherhood matters, as they are shut out from knowing anything at present. Our local Chairman, Bro. J. C. Jefferies, is now in Los Angeles on the Joint Protective Board, assisted by the local Chairman from 663. The brothers wish them success in their undertaking in trying to get a new schedule. This lodge is very proud of their local Chairman. The members feel that he is possessed with every qualification to fill the position that he now holds. He fires one of the big Pacific type engines between Salt Lake and Black Rock, and he is there with the goods.

Five of our oldest firemen have been promoted to the right side. Bro. Roy Miller has been setting them up to the cigars, not because he has been promoted, but owing to the fact that a little one has arrived at his home. Bro. L. D. Patterson is one of the lucky five who was promoted. He was firing the Nephi Limited, the cannon ball run.

Our collector, Bro. D. M. Richmond, does not pass any one up and is already with his hand outstretched to collect. Bro. Crane's wife, who has been in the East for some time, has again joined her husband. He is one of the most popular young men here. Bro. Winfield is the happiest man in the State, all on account of the arrival of a bouncing baby girl at his home. Dick has become very childish since he has been assigned to the desert. Our new district foreman has taken full charge of the new shops and roundhouse. We are pleased to say that he is well liked by all and hope he will make a success of his new position. Bro. M. King is back on the right side again after a long siege of illness.

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Lodge 451—(Member, South Chicago, Ill.) For the third time in the history of our lodge has death claimed one of our members, this time Bro. C. J. Miller. He died on August 29th, of typhoid fever. The death of this brother is particularly sad, occurring when it did, as he was so young and a very bright and promising member. We sincerely mourn his loss. He had been at the hospital and was removed to his home a few days before and was able to be up and about, when he had a relapse and died. Bro. Miller leaves a wife and little child, father and mother, and to these relatives the members of this lodge extend their deepest sympathy. The body was taken to Patterson, Ohio, where the funeral was held. As many of our members as possible met at the house to pay their last tribute of love and respect and accompany the remains to the train, Bros. J. W. Kelly and W. J. Schuyler going through with the remains. We wish to thank the Nickel Plate Railway officials for their kindness in furnishing transportation for the members and family.

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Lodge 289 — (Member, Chattanooga, Tenn.) As it has been some time since I have seen a Magazine, and not knowing what is going on around the country, I thought I would let the boys hear from the Q. & C. members. The weather is pretty warm here at present. As there are members of this lodge scattered all around the country they will be pleased to hear from us. As business here on this division is picking up, and I think will continue so, some of the boys have been promoted. I was under the impression that we had a very poor grade of coal to contend with, but from what I can learn as to the quality of coal used on other roads I am beginning to think that we have not got it so bad after all. We have been using small engines on this road, but they are going to be replaced by the larger ones in a short time. We have pretty good runs here, but, of course, they are not as good as those in the West. The mountain scenery along the road is very pleasing to the eye. We have a fast freight run where we only work 20 days a month and receive very fair pay. Our passenger runs are very good, as we get 36 hours rest at home and 9 hours at the other end and I think that is pretty good.

Our M. M. is as good as could be wished for and is liked by all the men under his charge. These engines do not burn very much coal, and that gives us a good chance to get plenty of fresh air and rest. I will expect to hear from some of the old Q. & C. boys who are in some far off country working.

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Lodge 553—(Member, Shamokin, Pa.) This lodge was transferred from New Berry to Shamokin with 36 members. We have been taking in some new stock and have transferred some brothers today. We have now 84 members. On Saturday, August 26th, we celebrated our anniversary at the beautiful Edgewood park and had a grand time. The committee deserves credit for the nice way in which this affair was carried through. Everybody had a good time, and we only wish that we had a few more brothers such as, Bros. Densevich, Derzeu, Wendell, Thomas, Wynne and Jackson, who were on the committee on arrangements. They left nothing undone (neither did we) to make it a success.

We have some members here who could attend every meeting if they only would, but am sorry to say that they do not. Then again we have some who are so interested that they lose time to attend meetings regularly. However, this lodge is considered in a good nourishing condition. This is the first time that this lodge has asked for space in the Magazine, and I hope to be a regular contributor. We extend our best wishes to all members of this grand organization.

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LODGE 52—(G. W. Cogley, Logansport, Ind.) I notice that none of our brothers have let our sister lodges know anything about us through the columns of our worthy Magazine. In behalf of Good-Will Lodge 52, I will say that she is in a flourishing condition. We have a membership of 132, and by our next convention we hope to reach the 150 mark. Our attendance is good and we have a very good set of officers. Bro. Costgriff always has a good word for all the boys that he meets. He seems to be a favorite with the ladies, also, and says that the principal reason that he does not get married is that all the ladies want him and he does not desire to hurt the feelings of any of them.

The ladies have a splendid Society and they are doing a great deal of good. They have some very faithful workers, and a nicer set of good-looking ladies are not to be found in the Wabash Valley.

On August 6th we received a letter from our Second Vice Grand Master, Bro. Timothy Shea, saying that he would meet 52 and 53 jointly on August 11th. He was true to his word, and as the train pulled in over the Wabash at 9:48, his genial smile was soon recognized as he emerged from the train platform where a number of the boys had gone to meet him. We escorted him to the Barrett Hotel, where he had dinner and was then ready for business. Going to the lodge-room he was greeted by a large crowd, and then the time for the performance began, and all went well until a candidate was prepared for the goat. As he was well trained for this occasion he was anxious for the victim and did his work well. After this candidate was initiated there was an unusual alarm at the outside door, which upon investigation proved to be E Pluribus Unum Lodge 81, who were invited in. Bro. Shea then gave us a very interesting and instructive talk, after which we were invited into the banquet room by the ladies, and I must say that the very tables seemed to groan under the load of good things to eat and every one seemed to enjoy it immensely.

On August 16th the B. of L. F. and the Ladies Society of this place gave their 5th annual picnic at the beautiful Spencer Park, which was well attended and was a grand success. Bro. J. D. Murphy gave us some of his solos, which he rendered very eloquently.

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LODGE 235—(Member, Pittsburg, Pa.) After having attended the picnic held by Lodges 235 and 646 on August 31st last I feel as much puffed up with pride as some of our newly promoted engineers appear to be with importance, after having made a day on an accommodation. My pride is caused by the good behavior of the boys, as everyone seemed to consider himself a committee on good order. As 646 won the ball game and most of the prizes, I wish to warn them that pride goeth before a fall. I also want to tell them that if they get each of their members a pair of electric shoes like the ones worn in the ball game, for service on the road, there will not be so many detention reports handed in by our engineers here in Pittsburg. This is not said because we are sore, but in a spirit of brotherly love.

We wish to thank the officers of the Pittsburg Division for their courteous treatment and their generosity to our committee of arrangements, as we received everything that we asked for, free train included. We also wish to compliment the said committee. The Russian and Japanese commissioners are not in it with them. Was there any one who doubted the success of our picnic or the greatness of 646? If so, they should have interviewed Bro. Bracken while we were waiting for the cars at the entrance to the park.

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LODGE 564—(W. L. Brooker, Chicago, Ill.) Most of our old officers having refused to use their names for re-election, we have just launched forth into another year with an entire new list of officers. Now, brothers, let us all get together and give them all the support we can by attending meetings a little more regularly and assisting them in the good work, for our goat is still in good shape and always looking for new material to work on, as perhaps some of our new brothers can tell us.

Vacation being about over, the brothers who were lucky enough are coming back from a month's recreation. Some of those that could not get a month managed to stretch their time a little, as Bro. Koehn could tell us if he would relate that little incident in the Nebraskan cornfields, were a hoe, a cornstalk and a toe got mixed up together. We have a good membership here and although we are losing a few of our older heads, they having gone into the B. of L. E., we still have some good material coming along the line.

We would like to have some of our Vice Grand Masters or Grand Lodge officers give us a call. It is a good while since we have had the pleasure of meeting with any of them.

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LODGE 130—(Member, Master, Milwaukee, Wis.) The following news item taken from a Milwaukee paper is self-explanatory:

"According to statements by men who are in a position to know, the Brotherhood of Railway Firemen is taking steps to help Gov. La Follette in his fight against railway corporations.

"Within the past week, it is said, one of the Milwaukee lodges of the organization has issued a circular letter to members of the Order in different parts of the country, where Gov. La Follette is billed to speak, calling particular attention to the attitude of Wisconsin's chief executive against corporate power, and particularly against the railroads, and extolling his interest in labor organizations.

"The letter also urges members of the organization, in the cities and towns which he visits, to send committees to call upon him and to show him every courtesy possible."

For Lodge 130 I wish to plead not guilty of taking any part in using or sending out the circulars referred to in the above article, if such a circular was sent broadcast over the country as stated. I wish to inform our members into whose hands it may have fallen, or anyone of our members that may have heard Gov. La Follette speak during his tour through different States, that under our great reform with Gov. La Follette at the head, that this State is a good place for any of our members looking for a position to stay away from. They can not obtain transportation unless they are good box-car hustlers, and they must keep out of the crew's sight, as they are compelled, under our new Railway Commission Law, to put them off or leave themselves liable to arrest, fine and imprisonment for giving them free transportation. For several years the road I fire on furnished transportation to firemen looking for employment, but it is a thing of the past now. If any of our brothers should find themselves in Wisconsin and can not get out, do not look daggers at any of the brothers of our Order when they tell you it is a violation of the great reform laws of Wisconsin to furnish you with transportation from one place to another.

Our convention committee has been selected, headed by Bro. Humphrey, of Lodge 388, and earnestly hope that every member in this city will give this committee their undivided support to make the arrangements for our convention, one year hence, a grand success. Now, brothers, get a hustle on you and show Milwaukee as it should be shown and can be shown.

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Lodge 262—(Arthur E. Bishop, West Toronto, Ont.) This will let the brothers who did not attend the union meeting in Toronto, know that this lodge is still alive and prospering. Ask any of the brothers who attended the meeting about our boys and you will find that they are all right. At our last regular meeting on August 13th we had two of our Vice Grand Masters present, Bros. Wilson and Ball.

Bro. Wilson acted as Master and one candidate was initiated. The lodge was crowded, and thirty visiting brothers were present. We are initiating candidates at nearly every second meeting, but some of our old members are withdrawing to join the B. of L. E.

Since the beginning of the year we have lost two of our brothers. Bro. Wm. Keaney died in January from injuries received by being run over by an engine. Bro. Keaney was Inner Guard at the time of his death and the members of this lodge miss him very much.

Bro. R. Stocks was drowned on July 30th and his body was recovered August 1st. The boys turned out well at his funeral, over fifty being in line to pay their last respects. A number of members of other railroad Orders also attended the funeral. Bro. Stocks was an only son, and the sympathy of our members is extended to the bereaved father and mother. Bro. Ed. Walker has had the misfortune to lose his eyesight. He was a hostler and fell off an engine about eighteen months ago. The fall caused cataracts to form on his eyes and through an operation his sight was destroyed. We extend our sympathy to him in his sad affliction.

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Lodge 602—(Ernest Watrous, Shawnee, O. T.) The correspondence department becomes more interesting to me with every issue, and I dare say the same for many other brothers at home and abroad.

Do we ever stop to think how much about home people and home events a few words mean to those who are absent? I sympathize with the brother of Lodge 77 in the oil fields of Kansas. I waited until

WRECK ON THE C. & O. RY. AT OLIVE HILL, KY., JULY 1, 1905, CAUSED BY AN OPEN SWITCH

I made up my mind no one else would write and then I wrote. His suggestions as to the attendance at lodge meetings are very good and we all know they should be followed by the brothers everywhere, but let each one ask himself, do we do it? For nearly two years I have kept a register for Lodge 602, and I will say to the credit of our members we have some first-class attenders. There are a few who can always be found on the street instead of in the lodge room on meeting nights—but such cases are the exception and not the rule, I am glad to say.

Business has been very good here for the past few weeks, which has kept many of us away from lodge, but it is a pleasure to know that there are a few of the faithful who will do all they can at such a time. Bros. Wm. Lambert, C. W. Race, E. P. Durand, Albert McGee and C. O. Sutton have successfully passed their examination and are now engineers on this division of the Rock Island. We, one and all, wish them success and plenty of it in their new and responsible positions.

It is with deep regret that I have to announce the death of Bro. Peter F. Hannon, who died of appendicitis at Eureka Springs, Ark., July 21st.

This is the first time in the history of Lodge 602 that our charter has been draped in mourning for a departed brother, and we one and all sincerely trust that it will be the last time. Bro. Hannon had been in poor health for some time and went to Eureka Springs, hoping the change would benefit him, but it was too late. First reports from there were encouraging and led us to believe he would soon be with us again, but a higher power deemed otherwise, and today we are mourning the loss of a friend and brother, dear to us all. Bro. Hannon was born at Bradford, Pa., about 31 years ago, and at the time of his death was roundhouse foreman at this place. He was one of the few who had worked their way up the ladder, having at one time fired out of Helper, Utah, on the R. G. W. Knowing as he did the trials and tribulations of the men on the road, he was a friend and brother to us at any and all times.

His funeral was one of the largest ever held in Shawnee, and the respect and esteem in which he was held, was evinced by the large concourse of sorrowing friends and brothers who followed his remains to their last resting place in Fairview Cemetery.

Bro. Hannon leaves a father, mother, brother, sister and two little daughters, and to these in their bereavement, the officers and members of this lodge extend their heartfelt sympathy.

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Lodge 481—(C. E. Lindquist, St. Louis, Mo.) We have by no means been idle, for our membership has been rapidly increasing. The members of our lodge are still of that good hustling spirit, and never let anything get by them in the way of lodge work.

Our K. line members are certainly very much pleased over the results of the Burlington Joint Protective Board meeting in Chicago, and our representative, Bro. Brouse, tells us that Bro. N. C. Allen, Chairman, can not be given too much praise for the way he handled the affairs. The schedule of the Burlington firemen is certainly one that any road could be proud of, and I think the Board can not be complimented too much for their magnificent work.

At our first meeting in July our officers were installed. Our old stand-by and father of Lodge 481, Bro. Mincer, who has served us as Master for the past eleven years, asked for a year's vacation that he might sit back and see some of the younger element do the work. The writer was chosen as his successor, and promises that he will use every effort to continue the good work in the future as it has been in the past. With Bros. Harpe as Secretary, Linck as Collector, and Watson as Treasurer, we believe we have a first-class clerical and financial staff of officers. We also believe that Bros. Brouse, Koester and Navin will successfully handle the grievances on the K. line, as they have been chosen to represent the Local Protective Board. We have no reason to think otherwise of the Merchants Bridge Protective Board, for we feel sure that Bros. Jos. Goodwin, Wm. Kimberlin and J. F. Watson are very good material for that office.

At the conclusion of the installation of officers Bro. Mincer was presented with a lovely charm for his faithful, successful and untiring efforts in building Lodge 481 to where she stands today. The committee on arrangements invited us to participate in refreshments and cigars and this, together with some very good music furnished by our home talent, was appreciated by all present.

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Lodge 546—(Member, Del Rio, Tex.) It is with sad hearts that we chronicle the death of our brother, John Taylor, who met his death at Baxter's Curve, ten miles east of Sanderson on the evening of July 21, 1905. This curve is exceedingly sharp, winding around a mountain, a high bluff on one side and a deep canyon on the other.

Passenger train No. 9 left Del Rio on time, with Engineer C. E. Thompson and Bro. Taylor in charge. All went well until reaching this curve, when for some cause unknown the engine left the rails, hurled itself 60 or 80 feet in the canyon below, carrying the precious freight of the engineer and fireman with it.

Our brother was picked up scalded from head to foot; he lived five and one-half hours, being conscious to the last. The engineer was mangled almost beyond recognition. The remains were brought to Del Rio and were cared for by their respective Orders.

Messages were sent to Tennessee, to the home of the bereaved family, asking for instructions. The widowed mother was so prostrated with grief that she was confined to her bed under the care of a physician and the brother sent a message to bury him in Del Rio, and he would come as soon as possible.

The following Monday afternoon, upon the arrival of the sorrow-stricken brother the remains of our friend and brother were laid to rest, Rev. Wintergreen, of the First Baptist Church, officiating. His words went home to each and everyone, and the quotation, "In the midst of life we are in death" never seemed so real as it did then—cut off in the twinkling of an eye, when life seemed so promising, in the full vigor and health of youth, without one moment's warning.

The beautiful ritualistic service of our Order was used at the grave, Bro. Barr, of San Antonio, taking the place of the lodge Master, and Bro. A. J. Kelly acting as Chaplain. Flowers were in abundance and the floral pieces were beautiful, among them being an anchor made of white lilies and across the bottom in violets were the figures: "145," brought from Lodge 145, San Antonio, by Bro. Barr.

Several photographs were taken of the casket, which was literally covered with flowers, that they might be sent to his mother, letting her know that although John died away from relatives and home, yet he was among friends. Our sympathy goes out to the sorrowing mother, sisters and brothers, but we do not mourn as those without hope, for we know that the all-wise Father doeth all things well. "The Lord gave and the Lord taketh away, blessed be the name of the Lord." May strength from on high be granted to the bereaved ones, that they may realize "it is better farther on."

Special thanks are due Mr. and Mrs. C. W. O'Dell, of this city, who opened their home to receive the remains, and from where the funeral took place.

month at Denver. We all join in wishing himself and wife success in the future. No doubt there will be others to do likewise in the near future, as several of us are now at the proper age in life to enter into the bonds of matrimony.

I sincerely trust that we will have as good meetings in the future as we have been used to in the past.

Our Brotherhood, to my knowledge, is the grandest organization in the country, and I herewith wish success to all of its members.

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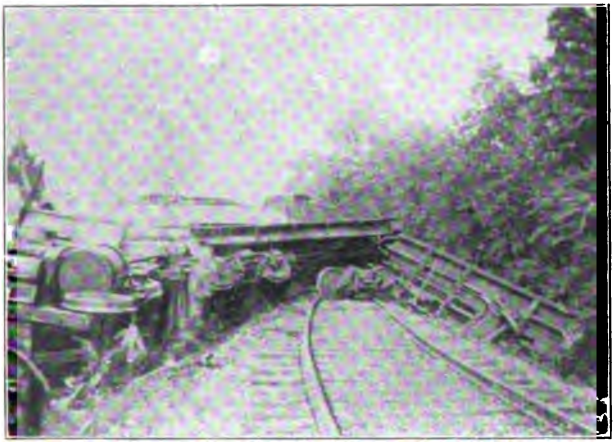
Lodge 562—(Harry A. Bridegam, Reading, Pa.) It is with sincere regret that we report the death of one of our most beloved brothers, Eugene Ahn. It was Bro. Ahn's one particular aim in life to become an engineer, and after firing freight for one more month he was to have been promoted. It is very sad that he should be taken away from this earth just as the aim of his life was to become a reality.

One night as he was returning home from the engine house after coming in from a successful trip, while crossing the tracks he was struck by one of the fast freights coming through the yards and was carried into another world.

Bro. Adam Bender, of this lodge, the engineer, made all efforts possible to save his life, but without avail, as he had received too short a notice to do any good. Bro. Ahn was of a jovial disposition and well liked by all of his fellow employes. The members of this lodge extend their sympathy to the bereaved parents.



WRECK ON THE C. & O. RY. AT OLIVE HILL, KY., JULY 1, 1905, CAUSED BY AN OPEN SWITCH

Lodge 256—(Blaine Markle, Como, Colo.) The members of this lodge are to give their 23d annual ball the 25th day of August, and if it proves as much of a success as those in the past we are all confident of having a very pleasant evening. We always furnish the best of refreshments and the very best of music, and as a general rule realize a good round sum.

In re-electing our officers for another year we certainly made good selections, as they are all up to date and take a very great interest in our Brotherhood.

Several of the boys have lately been examined for the right side, and if they succeed as well as they did as firemen they will undoubtedly have a good clean record. Business is fairly good on our road and the prospects are very bright for the future. The B. of L. E. are doing all they can to get a division here, and I say, let the good work go on, as it will no doubt be of great benefit to us.

Bro. Edward C. Cross, one of our old members (but now a member of the B. of L. E.) was married on the 9th of this

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Lodge 608—(Member, New London, Conn.) For the first time in the history of this lodge we are called upon to drape our charter in mourning. Our late brother, Frederick C. Gregg, met with instant death on June 30th, while firing train No. 95, on the C. N. Ry., which collided with Extra Engine 325, at Monson, Mass.

The accident was caused by a flagman, who being sent out to protect Extra 325 against train No. 95, fell asleep and thereby permitted the train he was to flag to pass by without warning. As there is a very sharp curve at this point all were unconscious of their danger until they were in very close range. Bro. Gregg was the only one to meet with accident. Both engines were completely smashed and nine cars badly wrecked.

The remains of our departed brother were sent to the home of his parents and were buried Sunday, July 2d, the members of this lodge attending in a body, as well as a great many friends and relatives. The floral offerings were many and beautiful, including a pillow of flowers with the inscription, "Brother, 608, B. of L. F."

The members of this lodge wish to extend their sympathy to the parents and relatives during their bereavement. The remains were afterwards removed and buried at Marshfield, Vermont.

Bro. Gregg was but 21 years of age and had been a member of this lodge since 1902. He was always very prompt in paying his dues, and it would be well for some of the members of 602 to follow that example.

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Lodge 633—(Member, Pittsburg, Pa.). The conditions of our lodge are improving. At our annual election the same officers were re-elected for another year, and our report for the fiscal year, ending June 30th, shows a marked increase in the balance on hand. Our membership is 57, with plenty of good material to work on; therefore our prospects are brighter than ever before.

Owing to the large increase in business on our road it is almost impossible for our members to attend the meetings regularly.

We have at last moved into another hall, and it is safe to say that some of the members would not care to see moving day come very often. Bros. O'Neil, Knapp and several assistants thought they had time "to carry a trunk," so they proceeded to move by hand.

For the second time this year our charter as been draped in mourning for a departed brother. On August 3d Bro. I. E. Muse met with injuries while on duty which resulted in his death some hours later. He was buried on August 6th, at 2:30 p. m. in Homewood Cemetery. The heartfelt sympathy of the officers and members of this lodge is extended to the wife and two children who were left to mourn his loss.

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Lodge 192—(Member, Tacoma, Wash.). It is with much sorrow and regret that this lodge announces the death of our beloved brother, Harry Brown. Bro. Brown was on engine No. 8 going from Tacoma to Seattle; when leaving Auburn he went out on the pilot to place his signal flags and in some way he fell off. He was caught under the wheels and met instant death.

The funeral was conducted by the Brotherhood, at which a large number of members were present, besides a host of his admiring friends.

In the death of Bro. Brown the Brotherhood has lost a loyal member and a hard worker for the cause that he believed was right. He was a true friend and was ever ready with a hand to help and a word to cheer.

Lodge 607—(Lawerence Ahern, Winnemucca, Nevada.) I wish to express, through the columns of the Magazine, the sincere sympathy of the officers and members of this lodge to Bro. C. H. Breffle, on the occasion of the sad loss of his beloved wife, who was buried on August 10th. Bro. Breffle is also a member of the B. of R. T., and has been a member of the B. of L. F. for ten years, and is a true and staunch Brotherhood man. Mrs. Breffle was in bad health for the past four years and answered the final call on August 7th, at Reno Hospital.

The remains were brought to Winnemucca for burial. The funeral was largely attended by members of the B. of R. T., and B. of L. F., among which were Bros. A. D. McDonald, E. G. White, Joyce, Davis, Corbier, Ahern and Heaton of this lodge.

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Lodge 489—(W. H. Carey, Pittsburg, Kan.). It is with profound sorrow that I announce the death of one of our most esteemed brothers, Geo. H. Devers, and we have, therefore, draped our charter for the first time in the history of this lodge.

Bro. Devers lost his life in a head-end collision on August 12th, about two miles from Neosho, Mo. The porter was also on the engine at the time of the crash and received injuries which resulted in his death, while the rest of the crew saved their lives by jumping. Bro. Devers was a very promising young man and well liked by all who knew him, and we all regret very much that the hand of fate should take him away from our midst. The members of this lodge extend their heartfelt sympathy to his relatives during this bereavement.

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Lodge 121—(Member, Corning, New York.) I am called to relate the death of our brother, Thomas Monroe, who died in Corning Hospital September 1st, of appendicitis. He suffered five days after the operation and then left this world to meet his Maker. Bro. Monroe has had bad luck indeed, being a victim of a wreck four years ago the 4th of last July, at McBurnies, one mile north of Corning. Bro. Monroe was a good Brotherhood worker and was well liked by all who knew him. He is survived by a father, mother, two sisters, and a brother, who is now firing on the New York Central and is a member of this lodge.

Bro. Martin Gruner is out trying his new artificial limb, although unable to walk except with the use of a cane. We all feel glad to see him that much improved. It will be remembered that he lost his foot in DeWitte last winter.

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Lodge 651—(J. C. Williams, St. Mary's, Pa.). A most enjoyable time was spent at the home of our Secretary, Bro. Simons, on Monday evening, August 7th, where fifteen of the boys were present. Refreshments were served by Bro. Simons' wife and every one present seemed to enjoy it very much. Music was furnished by Miss Simons and singing by Bros. Mullaney, McFeeley, and Williams, who surprised all present by their fine voices, and all the brothers agreed that they could find a more suitable calling than spading the black diamonds or pulling the throttle. When the musicians finally struck up "Home, Sweet Home" it was with a feeling of regret that the hours had passed so quickly, terminating one of the most pleasant evenings spent in a long time. All present were well pleased and hope to be spared to meet again on a similar occassion.

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Lodge 651—(Member, St. Mary's, Pa.) We have a fine set of officers who can not be beat when it comes to hustling for new members. Our Secretary and Collector are always at their post of duty, and Bro. John Herzing, who has charge of the goat, is a fine fellow and always keeps "Billy" in good shape. The way he makes the boys ride the goat down the line is certainly great. The conditions on our road are pretty good, but like all roads there is plenty or room for improvement, which is going on rapidly. Our engines are in very good shape and we have but little room for complaint. Many thanks to our officers for the efforts they are putting forth to maintain this good condition. Our division is 124 miles long, which has its ups and downs, but with a good general set of officials and engineers the boys are pretty well satisfied with their jobs.

WRECK ON THE C. & O. RY. AT OLIVE HILL, KY., JULY 1, 1905, CAUSED BY AN OPEN SWITCH

Quite a number of the boys have taken unto themselves life partners in the last few months, and we sincerely hope the pathway of their wedded life will be strewn with sunshine and happiness.

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Lodge 141—(P. H. Doty, Fort Wayne, Ind.). It is indeed with much sorrow and regret that we announce the death of one of our most esteemed and beloved brothers, John W. Eggiman, in a wreck at Mingo Junction, Ohio, on the evening of August 15th. His death was due to the spreading of the rails and the derailment of the engine, pinioning him between the tender of the engine and a stone embankment through a deep cut. Bro. Eggiman had been in the service of the Pennsylvania Company for six years, having been promoted to engineer two years ago. He has been a very careful and industrious employe and beloved by all. Last June, with several others, he was sent to the C. & P. Division to help out during the summer rush of the coal and ore trade. His wife and two little girls had been visiting him for about two weeks. They had contemplated returning to their home in Fort Wayne, Ind., in a few days and he was to accompany them on their return for the purpose of taking a few days rest. However, God, in his inscrutable wisdom has called him home to that long and peaceful rest, which has no end. His remains were brought home, and on Friday the 18th they were laid away in the beautiful Lindenwood Cemetery, under the auspices of the Brotherhood. We were highly pleased to note the number of B. of L. F. members present, and it shows how he was esteemed by his fellows.

Bro. Eggiman was a whole-hearted, enthusiastic Brotherhood worker, and it was always a pleasure to meet him, for he had a smile and a good word for everybody. There will be a vacant chair in our lodge-room that can never be filled, and we will miss him in more ways than one. His widow and two little girls have the sympathy of all who chanced to know them, and especially those of the B. of L. F.

This lodge is prospering and growing wonderfully. During the last year 53 new members were taken in and we have made a good start on this year. The membership is now 246. Our Second Vice Grand Master, Timothy Shea, made us a call and we had a very enjoyable and profitable evening. Owing to the fact that we were obliged to call a special meeting there was not the attendance that would have been could we have come on our regular business meeting evening.

I trust that his visits to other lodges will be of as much benefit and do as much as the visit to this lodge. We always welcome our Grand officers, and only regret that we have the privilege to do so so few times.

Lodge 202—(Ora C. Cavins, Chillicothe, Ohio). Except by referring to the Directory containing the number and location of the many different subordinate lodges, no one would ever think that this little city was blessed with one of the most flourishing and enthusiastic lodges that could be found in many day's travel. Although there are many of the brothers in this lodge who are probably much better posted than myself in regard to the past history of the lodge, still I feel that it is my duty to tell what little I know of it since adding my name to the Order. Our meetings are held upon the first and third Sundays of each month at 2:00 p. m. We have an excellent membership of 128, of whom 24 are engineers, 50 are firemen in active service, and 58 are brothers who have been employed in active service, but who are now following other vocations.

Our lodge is presided over by Bro. Jesse Green, and with such men as he and Bros. Albert Maunsell, Eddie Brand and James Agane, Secretary, Treasurer and Collector respectively, we feel that our Order is in excellent hands and that its future is full of many bright prospects. Yesterday being our regular meeting day, we were highly honored by a visit from our worthy Second Vice Grand Master, Bro. Timothy Shea. We came very near missing this visit owing to our visitor being quite sick the entire night before. He was threatened with typhoid fever, his temperature being as high as 103, but he came to our meeting and told us he thought he would be O. K., as he was feeling much better. He rendered an excellent address which was boiling over with pleasure and instructions. Although we had a good attendance, yet there were many of the brothers absent and those are the ones that missed a treat.

The principal points brought forth by Bro. Shea was the necessity of prompt payment of dues. The jeopardy in which we placed ourselves and families by failing to remit promptly, and by explaining the advancement of the B. of L. F. as the years have passed by, comparing the conditions of the North with those of the South as they exist at the present. When he had finished we all felt that we could say that as a labor organization the B. of L. F. heads the list. When Bro. Shea was asked why we were not visited oftener by the Grand officers he replied that it was not necessary as we are fully able to look out for ourselves.

We had quite a number of applications from young firemen for admission into our Order and expect a great many more in the near future. Our average of initiations is about two each meeting, and that is not bad. One good thing about 202 is that every man is a hustler, and as soon as a new "smoke agent" is eligible to the Order he is besieged on all sides by brothers with blank applications in their hands. We have plenty of work and no one need complain of a short month. Of course our engines are large and not the best, but we can make a good living and we should not kick. At this day and age of the world it would be a hard matter to find a road where firing is a snap. We have a good set of officials and everything goes along smoothly on the B. & O. S. W.

We had quite a sad accident a few weeks ago in which Engineer "Tooky" Spaulding (age 74, the oldest on the road) and our road foreman of engines, W. B. Gallivan, lost their lives. They were on No. 3, pulled by engine 883, which collided with a street car near Cincinnati, resulting in derailment and turning over of engine. Fireman W. F. Brown was also on the engine but escaped with a slight injury, and this is considered miraculous as the engine was a complete wreck. The death angel has been exceedingly kind to us during the past two years, as we have lost but two brothers. We hope it will be many years before the grim reaper pays us another visit. I trust I will see a letter from some of the other brothers before long. Don't forget that this lodge is here to stay.

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Lodge 86—(Member, Laramie, Wyo.). This is a busy little lodge. We have had four elections since June, besides taking in a few new brothers. Now everybody is getting down to business, as our general Board meets this month at Omaha. Bro. McLaughlin has been our Chairman for several years and will look after our affairs at this meeting. Bro. Nottage is like an old timer, and you would think that he had been Master for several years, instead of a few months. Stick to it, Harry, and with your good ruling hand this lodge will hold her own with any lodge in the West. Bro. C. Kennedy, our new Collector, will be on hand to see that everybody pays their dues in proper time. Our old warhorse, Bro. J. A. Anderson, is still our Treasurer and will take care of the money and see that it is turned over to the Grand Lodge at the proper time every month. Bro. Duel still holds the office of Secretary and is not afraid to throw the ink. With such officers as these the members of this lodge can well feel proud of the Brotherhood.

Since last June we lost several of our good members who have joined the B. of L. E., among them being our Past Master, Bro. W. Brown. Bro. H. White was married a couple of months ago, and he has the best wishes of the members of this lodge. Bros. Duel, Moody, and McAllister are wearing the smile that will not come off, on account of the arrival of a bouncing baby at the home of each. Bro. S. Tregoing, who is sick at Ogden, is now getting better and will be able to leave there in a few weeks. In the past few numbers of the Magazine there has appeared letters from the Ladies Society, Jewel 86, one sister stating that she supposed we had forgotten our precious jewel. Still another writes that she believes we still think of them as our precious jewel. Now why should we not think so? Are they not the sisters, wives and mothers of those who are members of this grand organization?

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Lodge 584—(Member, Ludlow, Ky.). Although you do not hear from us very often we are still in existence. Our lodge is increasing in membership at every meeting and our goat is, therefore, kept very busy and has become quite an expert in his part of the business. A complete set of new officers were elected for the ensuing year, and I think we could not have made a better selection. Some of the boys have been transferred to the right side to manipulate the throttle, and in this manner we have lost several good members. We have quite a good attendance at nearly all of our meetings and there is only a scant few who never attend.

The bridges on our division have all been strengthened and the large engines that are to cross them every day have at last put in their appearance. Some of the boys say that it will be like throwing coal into a tobacco barn, or throwing spongy nuts out into the world, that is the new coal we use, and it burns like iron nuts. Our schedules are pretty long, but would not be so if it were not for the surprise tests that we have here for the amusement of some of our officials, who enjoy it immensely. We make pretty good time here, that is, overtime. We would like to have one of the Grand Lodge officers pay us a visit, as it has bene sometime since we have seen any of them in our lodge-rooms.

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LODGE 590—(J. Lynne Thompson, Beaumont, Texas). The hand of death has again visited our lodge, this time removing from our midst our esteemed brother, J. J. Holland. On August 26th last, Brother Holland with his father and a friend went fishing, and while swimming in the village creek got into a deep hole of water, was seized with the cramps and was drowned before assistance could reach him. His father seeing him in distress endeavored to reach him in time to save his life, but as he had to swim up stream with all of his clothes on, which held him back considerably, when within about fifteen feet of his son saw him sink, never to rise again in this world. Brother Holland was an expert swimmer, but in a case like this it was of no avail to him. His remains were brought to Beaumont by his father and were buried at Colmesneil next day under the auspices of the B. of L. F.

Brother Holland was one of our best members and was popular with every one who knew him. This is the fourth time our lodge has been visited by the grim reaper within the past four months.

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LODGE 231—(Member, Wilmington, Del.) I have been a member of this lodge since August, 1889. I am glad to say that there are still a few of the old line members working hard for our Brotherhood. I have served 16 years on the road, six on the left side and ten on the right side, but on account of sickness and failing eyesight the relief doctor turned me down. After entirely recovering I was then past the age limit and consequently too old to look to railroading. For the past two years I have been an Air Brake Inspector on the P. & R.

Our lodge is getting along very nicely, although there is plenty of room for improvement. We initiated two candidates last Sunday and have one application on hand now. Our membership used to hover very close to the 200 mark, but is down to 180 now on account of a number of the boys joining the B. of L. E. Probably the new officers will stir things up a little for us. I wish success to all the members of the Brotherhood.

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LODGE 409—(H. A. Van Brunt, Princeton, Ind.). Business is picking up on the Air Line. Even so with lodge 409. We have initiated a number of candidates since August 1st and have several approved applications on hand. Come in boys while the times are good, for even though Bro. Shea clipped our goat's horns they might grow out again if you wait too long.

Our Second Vice Grand Master is all right. We received Bro. Shea on August 25th and held two meetings. A large number of the boys were in attendance, and those who laid off had no cause to regret it. We were thoroughly instructed in the secret work and new Ritual and given valuable information in regard to existing conditions on other roads. A candidate was brought forward and duly initiated. This was the finishing touch to a successful day, for Bro. Shea's handling of the new Ritual is superb.

The following day 16 members of this lodge with four candidates accompanied Bro. Shea on a visit to lodge 536, where they passed a pleasant evening. We are well pleased with Bro. Shea and wish him success.

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LODGE 220—(John P. Jones, Sunbury, Penna.). On August 20th last, Bro. C. A. Wilson, First Vice Grand Master, was with us and it was the banner meeting of the month. There were six new members initiated. Bro. Wilson gave one of his always cheering and inspiring talks. Refreshments were afterwards served and a social hour with our sisters was very much enjoyed. Business is fairly good here this month, but last month the boys were too busy to attend the lodge meetings. We are feeding our goat well, for we have eleven candidates for our next regular meeting. August has been a banner month, as we have had twenty-one applications. I am glad to say that Bro. C. E. Rolser, who has been laid up with the fever for eight months, is getting along nicely now and soon will be able to attend to the right side again. Bro. H. F. Yeager who was granted his claim, is in bad shape and has no use of his lower limbs. All of the brothers extend their sincere sympathy to Bro. Yeager in his sad bereavement. We want this to be the banner year for new members, and I would like to see a full attendance at every meeting to help the new officers in their good work.

I would like to see the boys of this lodge take a little more interest in writing to the Magazine. I hope this will break the ice, and that more letters will appear from this lodge. The visit of Bro. C. A. Wilson was very much appreciated and will always be remembered by the members of this lodge.

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LODGE 649—(Alfred J. Hansen, Manistee, Mich.). As it has been a long time since there has been anything in the Magazine from this lodge, I will endeavor to let the readers know that we are still alive and prospering. We are all working hard for the interest of the Order, devoting every Sunday afternoon to lodge work and other things pertaining thereto.

As for enrolling new members we have had no candidates for quite a while, but in a few days we expect to have a chance to use our new initiating outfit. I think by the time a candidate has entered the gates of the Brotherhood of Locomotive Firemen and he undergoes all the trials from start to finish, he can shake a fireman's hand and speak for himself.

A quiet and sociable reception was given by the members of this lodge in honor of the ladies and our esteemed guests, Mr. and Mrs. E. N. Weist, and all seemed to enjoy themselves very much. Mr. Weist is our day roundhouse foreman. At three o'clock we all assembled in the diningroom where we were served with refreshments by several of our most skilful members in that particular line. After partaking of refreshments we retired to the lodge-room where music was rendered by Bro. A. Stevens, who favored us with fine selections on the phonograph. The whistling solos of Mrs. John McFadgen were very entertaining, and a violin solo by myself was also appreciated.

The reception came to a close with an address from Mr. Weist, which was quite an inspiration. A little speech from Bro. Louis Tibbetts was also very good. Everyone enjoyed themselves immensely and the occasion will be long remembered.

On the 13th of August a game of baseball was played between the enginemen and trainmen on the M. & N. E. Ry. Talk about ball players! Well, if the big league clubs only knew we were crack players we would not have to fire an engine any longer. Nevertheless we met with defeat, but expect to do better the next time. We extend our best wishes to the members of our Brotherhood.

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LODGE 448—(Member, Cumberland, Md.) August 27, 1905, was a red letter day for our lodge. A few of its members met for the purpose of initiating a number of candidates in our grand and noble Order. We asked our worthy Grand Master, Bro. John J. Hannahan, for transportation to go to Elkins, W. Va., a distance of 113 miles, for the purpose of initiating and instructing members in the secret work. Being unable to get transportation over the W. Va. & P. R. R., which is or will soon be known as the W. M. I., we asked our superintendent, Mr. F. E. Blasor, for transportation from Cumberland to Belington, W. Va., and return, a distance of 145 miles. From Belington we went over the W. Va. & C. and P. R. R., a distance of eighteen miles. We left on train No. 3 at 5:17 a. m. Bro. O. T. Arnold got on, and he had that same smile. It's a smile that won't come off.

Our next stop was Piedmont, five miles west of Bryan, it being a helping station. Five brothers got on. Going west 76 miles we arrived at Bolisburg, W. Va., another helping station. There we picked up five or six, among them being Bro. C. E. Emmerson, our sub Collector. He stood the trip well, being somewhat of a size. He is also a member of the B. of L. E., but, brothers, he has not lost his loyalty for the great B. of L. F. Going west to Newburg helping station we got a few more good brothers. When we got to Elkins we had twenty-three. Our worthy Collector, Bro. F. G. Rinard, was there and had everything ready when we arrived at 12.20 p. m. We went straight to the K. of P. hall and initiated Bros. F. L. Harris, C. H. Sagor and F. R. Lotson, of Thomas, W. Va., so they could get away on the 2.40 train. Afterwards we intitiated the following brothers: F. O. Curtis, L. B. Holcomb and F. W. Oris. On the arrival of train No. 3 from Cumberland at 8.15 p. m. several other brothers arrived and other candidates received the full benefit of the crowd. "Billy" was in fine trim and none of the brothers had a kick coming because they did not get their money's worth.

All arrived home Monday night on train No. 12 at 10.20 p. m. "Billy" stood the trip home all right and was able to give Bro. B. H. Lewis, one of our pick-up firemen, all that was coming to him. He had been a fireman three years and, of course, should have joined long ago. Brothers, let me say, one and all, be loyal to your obligations; attend the meetings as often as you can. Your presence is needed at the hall where you have business to attend to. We have a membership of 300. On May 17 last we went to Bolisburg, a helping station, and initiated nine candidates. Our lodge is in good financial condition and growing in numbers, but if some of our boys would get married and stay at home with their wives, I think they would find time to come to the meetings once a month anyway.

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LODGE 221—(Member, Sarnia, Canada.) We wish to let the brothers know that we are still in existence, increasing in membership and working together in harmony. On the 23rd of August the combined forces of the B. of L. F. and the B. of L. E. held a most successful picnic down River St. Clair, of forty miles to Lashmoo Park. The day was ideal and the sports were all well contested and interesting. A feature of the day was a base ball game between the engineers and firemen, the latter winning. The tug of war also was a victory for the firemen. When the day of pleasure was over the crowd embarked on the steamer City of Toledo for their homeward journey to Sarnia, and for days afterwards you could still hear the remark, "What a grand picnic that double-header was." That speaks well for the untiring efforts of the committeemen who so nobly did their part.

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LODGE 235—(Member, Pittsburg, Penna.) Attention, brothers! I want to inform you that we still meet at Welsh Brothers' Hall, Pennsylvania avenue and 26th street, on the second and fourth Sundays of each month. As our attendance has been quite small of late, we came to the conclusion that you had forgotten our meeting place and we hope this will enlighten you and that we shall see your smiling face at our next meeting.

It is with deep regret that we recall the death of our worthy member, Bro. Whitemore, who was kiled in the Greensburg Tunnel. Bro. Whitemore was going east and was looking to see his brother, who is express agent at Greensburg, when a train coming west caught him, pulling him out of the cab window and killing him instantly. Bro. Whitemore, although an active member of Lodge 646 at the time of his death, had before his transfer been an active member of Lodge 235. He was always ready to put his shoulder to the wheel and help in whatever was to be done. His remains were laid to rest at New Bloomfield, Penna., and the funeral was attended by brothers from both Lodges 235 and 646. We extend to the bereaved parents, brothers and sisters our heartfelt sympathy. He was indeed a young man whom one could be proud to call brother.

Business is still booming on the old Pennsylvania and the boys are beginning to look up their standing for promotion, as there were twenty transferred to the right side on the 30th of last month. So, brothers, study hard and pass a good examination so that the B. of L. F. can be proud of you.

Our congratulations are herewith extended to Bro. H. M. Craig, who was recently married to Miss Dorothy Bailey; also, to Bro. T. M. Doriot, who was married a few days since and after an extended honeymoon will be at home in Pittsburg. Another matrimonial event of recent date was the Marks-Dowds nuptials. Mr. and

Mrs. Dowds have gone on their wedding trip, and cards announcing their "at home" in Pitcairn have been sent out. A long and especially a happy life is the best wish of the Brotherhood to them all.

I'VE GOT TO FACE MOTHER TODAY.

(Copied from James Whitcomb Riley's poem.)

I' got to face mother today, fer a fact!
  I' got to face mother to-day!
And jist how I'll dare to, an' how she will act,
  Is more than a mortal can say!
But I' got to face her—I' got to! and so
Here's a' old father clean at the end of his row!

And Pink and Wade's gone to the farm fer her now—
  And I'm keepin' house fer 'em here—
Their purty, new house—and—all paid fer! But how
  Am I goin' to meet her and clear
Up my actchully helpin' 'em both to e-lope?—
('Cause mother wuz set—and wuz no other hope!)

I don't think it's Wade she's so biased ag'in,
  But his bizness—a railroad man
'At runs a switch engine, day out and day in,
  An's got to make hay while he can—
It's a dangerous job, I'll admit—but see what
A fine-furnished home 'at he's already got!

And Pink—w'y, the girl wuz jist pinin' away,
  So what could her old father do
When he found her, hid-like, in a loose load of hay,
  But jist to drive on clean into
The aidge of the city, where—singular thing!—
Wade switched us away to the 'squire, I' jing!

Now—a-leavin' me here—they driv off, with a cheer,
  On their weddin' trip—which is to drive
Straight home and tell mother—and toll her back here
  And surrender me, dead er alive!
So I'm waitin' here—not so blame overly gay
As I wuz—'cause I' got to face mother to-day!

Our first picnic was held at beautiful Oakford Park, near Jeannette, on the 31st of August in unison with Lodge 646 of Pitcairn. A very pleasant day was spent by all, the most noted feature being the ball game, Mr. H. O. Scott being assigned the duty of umpire. His work was well done. We are very much indebted to Mr. Scott for the handsome silk umbrella which he was so kind as to donate for the men's race, and which was won by Bro. William White, of Pitcairn. Miss Johnson was awarded the first prize in the young ladies' race, the prize being a beautiful hand-painted fruit dish. Miss Adams, of Pittsburg, came in second and received a beautiful silk sun shade. Bro. Bolden, better known as "Happy Hooligan," and Bro. William Steele, better known as "Whitey," were the sack race winners and were awarded fountain pens

Our thirteenth annual ball will be held at Neanes' Auditorium Friday evening, November 17, 1905. Our worthy Master. Bro. John H. Brindle, is general chairman of the committee and he wishes the support of all the boys to make this our banner reception. Our last reception was a great success. Let us all do our best, brothers, and make this the greatest of the year.

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LODGE 277—(Wm. H. Klecan, St. Joseph, Mo.) On the 18th of April last at 6.10 a. m., two miles east of Troy, Kans., I was injured in a railroad accident. We were coming east with a stock extra and were letting the train drift down grade. We were just nine miles from home on the St. Joseph and Grand Island Railroad, and were running engine No. 44 (a new 125-ton Mogul). At the point above mentioned, on a straight piece of track, the track spread, derailing the engine and thirteen cars. Myself and Bro. Elmer Nelson, of this lodge, were the only ones on the engine and we ran out on to the tender, which at the same instant turned over with us, the cars fortunately turning over on the opposite side of the track. The rails from the tracks came up into the cab between engine and tender. I received an oblique fracture of the upper third femur of my right leg and was badly bruised about the body. Bro. Nelson, however, was more fortunate. He grasped the side-board of the tender opposite the side that turned over and held it, escaping with only a few bruises. I was taken to St. Joseph's Hospital at St. Joseph, Mo., and was kept there for eight weeks. I was then sent home, but have been under treatment ever since. Up to the present time no results have been accomplished and the bone still remains ununited, although it does not pain me. I am unable to walk without crutches.

If there are any of the brothers who have met with a like accident or know of any one who has, I would certainly be glad to hear from them. My address is 2136 South 9th street, St. Joseph, Mo.

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LODGE 451—(Member, South Chicago, Ill.) It is with deep regret that I announce the death of our beloved and true brother, John M. Kistler, who was called from our ranks by the hand of the grimp reaper on Tuesday, September 12th, by being killed in a wreck while at his post of duty. Bro. Kistler had been in the employ of the B. & O. R. R. as fireman, for the past six years, and at the time of his death was on his regular engine on the city transfer. He was killed without a moment's warning, caused by the engine leaving the rail. Bro. Kistler was a true and loyal employe, a kind and loving brother, a good, faithful son and a man loved and respected by all that knew him. It was with aching hearts and tearful eyes that the brothers of our noble Order and his many friends viewed his remains before they were shipped to his late home in Mannsville, Penna., in charge of Bros. R. B. Perry, R. M. Wasson and F. E. Stevens. The funeral party left South Chicago, Thursday evening at 4.25, arriving at his late home the following Saturday morning at eleven o'clock, where his remains were viewed by his family, relatives and friends. Bro. Kistler leaves a mother, father, three brothers and a large number of relatives and friends to mourn his death. The floral offerings were many and beautiful, showing the high esteem in which he was held. Short services were held at his home by the Reverend Mr. Snyder. His body was then taken to Elliottsburg, where funeral services were held in the Evangelical church by the Rev. W. N. Sanner, assisted by Rev. Mr. Snyder. The remains were then taken to their last resting place, where Bro. Perry, as Master, and Bro. Wasson, as Chaplain, administered the last sad rites of our Order. Bros. Wasson, Stevens and Perry acted as pallbearers, kindly assisted by Messrs. Neven Mohler, Oscar Mayer and W. E. Van Dream. In the loss of Bro. Kistler our lodge has lost a good and true member, one that we all delighted to call brother. His presence with us at our meetings was a tower of strength, as he was always encouraging each and every one of us to put forth our best efforts towards the upholding of our Order, which he loved so well.

I cannot write of this sad event without thanking Mr. E. J. Schwellenbach, superintendent of the B. & O. R. R., for the many courtesies and favors granted to the committee in securing transportation for our departed brother and funeral party to Martinsburg. I also wish to thank the officers of the Cumberland Valley Railroad (whose names I was unable to obtain) for transportation from Martinsburg to Harrisburg, and for holding their train until our arrival at Martinsburg. To the bereaved family I wish to extend the heartfelt thanks of this lodge for the many favors extended the committee while stopping at their home in Mannsville, Pa. To Bro. Carl Staffer and wife, the committee desires to express their thanks for the many favors extended to them upon their return home. To the mother, father, brothers, relatives and friends we, as a body of the B. of L. F., desire to extend the sympathy and condolence of our entire membership to the grief-stricken family in this, their sad hour of trouble, and trust that God in His infinite wisdom will give you strength and courage to bear the blow that has fallen upon you.

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LODGE 463—(Member, Elmira, N. Y.) Few men were more widely known in this city than Bro. L. W. Oakley, who was found dead at Big Stream Bridge, where he had fallen from his engine while performing his duty as fireman on the Canandaigua Division of the N. C. R., on September 21st. He had been at his work for almost a week before, and was in the best of health and seemed to be very cheerful. At the time of his death he was firing engine 4143 on train 88, and in some unknown way must have fallen from the deck. He was not missed until some time afterwards and his body was found in about eight inches of water in the bottom of a cavern about 90 feet deep. Bro. Oakley was a member of Lodge 463 and had faithfully filled the offices of Secretary and Treasurer. He was one of our most worthy and faithful members, always pleasant and accommodating, and with his hearty hand shake and smiling, genial countenance, he was always a favorite with his fellow workmen and every one that he came in contact with. The hearts of many of his friends were saddened at hearing of his death. He was 30 years of age and leaves a wife and one son to mourn his loss. To these the members of this lodge wish to extend their sympathy and condolence during this, their hour of trial.

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LODGE 236—(Member, Hinton, W. Va.) I wish to impress upon the minds of the brothers that we are still in the ring and doing a rushing business. During the month of August we had the extreme pleasure of initiating fifty-four candidates and still have a few more applications on hand, and we are only waiting for the boys to come forward and take their medicine. Our members are taking a great deal of interest in the lodge. As so many new members are coming in we hold a meeting every Saturday at 8 p. m., so, boys, do not forget the day and hour. Always bring a brother with you and you will be sure of not being by yourself. We can show the new members how to ride the goat. He is always in good trim and is well fed on the best of food, and we can assure you that he will give you your money's worth.

Now, brothers of Lodge 236, let us put forth every effort to elevate our organization to the highest possible standing. Be prompt in paying your dues and attend all meetings as far as possible, and by so doing you will have the satisfaction of knowing we are true to our obligation and have the welfare of the Brotherhood at heart.

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LODGE 333—(Member, Philadelphia, Pa.) Since it has pleased our heavenly Father to call one of our brothers from our midst, it is with deep sorrow and regret that we drape our charter for the departed one. We sympathize with parents and friends, but we must not ask why he was taken away so young, at the age of 25, but we must look to Him that doeth all things for the best. Bro. C. H. Hines was squeezed between engine and tank on the evening of September 21st, and lingered until the afternoon of October 1st. He leaves a father, mother and sister to mourn his loss. He was buried from the home of his parents on October 5th. A large number of members from Lodges 333 and 75 were present. We extend our sympathy and condolence to those that he was so dear to.

The lodge is doing nicely. We try and manage to keep the goat on the move every meeting night. We have initiated six candidates in the past two meetings. There are a good number of the boys that attend meetings, but not as many as we would like to have. Once in a while we have some of the old war horses of this lodge with us, and we always like to have them, such as Bros. Yank Sterling, Oves, Thacklinburg and several others, and I will say that we would like to have them meet with us oftener. We will be pleased to see any brother that may happen to be here at our meetings. Our lodge meets the first and third Wednesday nights in each month.

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LODGE 634—(Member, Brookfield, Mo.) Business is once more good on the Burlington. All engines are in use, even our little 17-inch standards. With it the wheels of promotion begin to roll and several of our brothers have already been put to running. With our new schedule, which went into effect August 1st, we all feel that our road is one of the best in the country. Same as on other roads, we handle big tonnage. Our last time card came out short two classes of rating. We used to have three, A, B and C. A is the heaviest and that was left on the card, while the others, which were lighter, were omitted, so that makes us hunt the shovel. The supply department ran short of arch brick and, as a consequence, we had to use a great deal more coal without the arch in the firebox. But that does not make any difference to us, as that is what we are being paid for and we asked for work when we were hired. Bro. Allen, our General Chairman, was here the other day. He was met at the station by several of our members and was escorted to dinner by Bro. Erdman. Bro. Allen said it was one of the best yet.

After dinner we went to lodge, where we had a good rousing meeting. Of course the boys had something on hand for him to do, but Bro. Allen is not the man to stand back, and the members of 634 can see in him the one they have long needed, a good helper.

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LODGE 88—(G. A. Schriver, Montpelier, Idaho.) As I am a member and have been for nearly two years, I thought I would say a few words. I am well pleased with the B. of L. F. and would not be without it for any price. I am not working at present. I have been crippled up for about ten months, but am doing fairly well and can get around somewhat again. I thank the boys of 88 very much for their kindness towards me and my family while I was in the hospital. I wish all members success.

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LODGE 256—(Blaine Markle, Como, Colo.) Four years have passed since our charter was draped in mourning, but now it becomes my sad and painful duty to report the death of our worthy brother, Joseph S. Brennan, which occurred on September 21st, at Fruita, Colo., of peritonitis. His remains were shipped to his old home at Brenham, Texas, for interment.

Bro. Brennan left here the 14th of August seemingly in the best of health, and his death was the first we had heard of him. Little do we think sometimes as we bid adieu that it is for the last time.

We have laid thee to rest in silence,
With hearts heavy laden with grief;
In Him, who hath taken thee from us,
We trust with unfaltering belief;
Tho' we mourn o'er our loss with keen sorrow,
Weep tears of anguish and pain,
Yet God knew what was best for our dear one—
Knew our loss would be thy endless gain.

We have laid thee to rest, yet we cherish
Sweet mem'ries of thy fond, faithful love;
With angels thy dear voice is singing,
In the home of our Savior, above.
May He give us the peace that we ask for,
Still the pain that lurks in each breast,
For the loved one He hath taken from us,
Bringing grief that we can not repress.

We have laid thee to rest where the flowerets
In summer will bloom o'er thy grave;
Where thy loved ones will come in their sorrow,
The beautiful flowers to lave
With their tears, for the one who is sleeping
The sleep of silence and rest,
Whose home's in a mansion of glory,
Where dwelleth the pure and the blest.

In meekness I kneel to Thee, Father,
In silence I bow to your will,
Yet I grieve o'er the sorrow of parting
From whose memory I cherish still
With a mother's love and devotion,
While my heart is breaking with pain.
Yet I know when I enter those "gates ajar,"
I shall meet thee, my dear one, again.

—Mrs. Nellie Bloom.

West Oakland, Cal., Dec. 20, 1894.

Lodge 256 tenders its heartfelt sympathy to his bereaved father, mother and other relatives in this hour of sadness and commends them to the care of our Heavenly Father, who knows all our sorrows, and who alone can heal them. May He, when their labors here are ended, take them to that eternal city above where death and parting is unknown. In the death of Bro. Brennan our lodge has lost a faithful worker and one whom we held in highest esteem. We trust that our Heavenly Father will see fit to reunite us in one grand brotherhood in the great beyond. Again we extend our heartfelt sympathy to all who are left to mourn the loss of our departed brother.

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LODGE 262—(Member, Toronto, Ont.) I regret to have to tell of the death of another brother, that of Bro. Norman Morley, who joined our noble order on August 22nd, and died on September 25th, being a member of our order just 35 days.

Death has been here and borne away
A brother from our side,
Just in the morning of his day,
As young as we, he died.

Not long ago he filled his place
And sat with us to learn,
But he has run his mortal race,
And never can return.

Perhaps our time may be as short,
Our days may fly as fast.
Dear Lord, impress this solemn thought,
Each day may be our last.

We none can tell who next may fall
Beneath the chastening rod,
One must be first, but let us all
Prepare to meet our God.

Bro. Morley was firing engine 571 on a work train on the Teeswater branch, when they collided with another work train at Waldemar. The accident happened at 12.43 p. m. and Bro. Morley was so badly injured internally that he died shortly after 7 o'clock that evening. He was conscious to the end and was prepared to die. He was in terrible pain, but never once did he utter a groan. His one wish was to see his mother before he died, but unfortunately she did not arrive in time.

Bro. Morley had a most remarkable career, although only 24 years of age. At the age of 14 he was a naval cadet on the British training ship Conway, where he won several prizes for general proficiency. At the commencement of the Spanish-American war he crossed the ocean and took service on Admiral Howell's flagship San Francisco, where he remained until the latter was put out of commission. He went to South Africa with the first contingent and saw active service in the Boer war. One year later he returned to Canada and went with an expedition to Hudson Bay and straits. Returning, he again went out to South Africa with the second contingent of mounted rifles, and one year later he arrived home on his 21st birthday. Two years and a half ago he took to railroading. He was firing engine 1018 on the 17th day of last February, when six engines, three each way, met in a blinding storm and one of his legs was badly injured.

Bro. Morley was buried on September 29th in Prospect Cemetery by Queen City Lodge. The pallbearers were Bros. Bedford, Kniewasser and F. Hubert, fireman

Weller (a personal friend) and two members of the Governor-General's body guards. One of the latter served in the Boer war and was very often at the side of Bro. Morley. The floral offerings were many and beautiful, and showed the high esteem in which our late brother was held. About 45 of our brothers turned out to pay their last respects to one whom everyone liked. The services were conducted by the Rev. Dr. Pigeon and Rev. Mr. McGregor. Bro. Pickney, assisted by Bro. Reeves, Chaplain, read the Brotherhood service at the grave. This lodge extends its sincere sympathy and condolence to the bereaved father, mother and brother, and we also drape our charter for 30 days in memory of our departed brother.

Our lodge is in good condition and we are taking in new members rapidly. At the meeting on August 27th we initiated Bro. Kennedy and our late Bro. Morley. At a meeting on September 26th we initiated Bros. Johnson, Shields, Oakes and Martin. We held a good meeting on October 3rd, and quite a number of our newly made members were present.

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Lodge 504—(Member, Yarmouth, N. S.) For the first time in the history of our lodge we have to record the death of one of our oldest members, Bro. William Taylor, who was employed on the Halifax and Southwestern as conductor. While in charge of his train en route to Halifax on the evening of September 16th, and standing between the engine and tender when going at a high rate of speed, in passing a set of facing points the tender jumped from the main line, taking the siding. The tender became detached from the engine and turned over, and a number of flat cars piled on top. Bro. Taylor was pinioned under these, suffering great agony for about two hours before he was relieved from this position. After being recovered from this awful position he was taken to the Victoria General Hospital in Halifax, where he died early Monday morning, the 18th. His body was brought to Kentville for interment and the funeral took place on Tuesday afternoon from his late residence. The services were conducted by Chaplain Lane, assisted by Chaplain McLean. Appropriate hymns were sung and the procession on leaving the house was headed by the Scotch Pipers' Band, 94th Regiment Argyle Highlanders, of which at one time our late brother was an active member. The funeral march, played on his favorite instrument, was an affecting part of the services. A large body of the militia marched in procession to the graveyard, as also did the Foresters, of which Bro. Taylor was a member. Floral tributes were many and beautiful, several being from the officials of the railroad departments. All the members who were able to attend the funeral were there to pay their last respects to a lamented husband, father and brother. His family have the deepest sympathy of our lodge.

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Lodge 596—(Member, East Toronto, Ont.) The night of September 12th was spent in a most enjoyable way by the members of this lodge. We felt very much disappointed in not having Bro. Wilson, our First Vice Grand Master, with us, but we received a letter, which was read at the meeting, expressing his regrets at not being able to be present. His explanation was readily accepted, as he had some very important business to attend to that claimed all of his time. We expect to have him with us some time this coming winter. The occasion of our entertainment was the presentation of a gold medal and badge to Bro. Westlake for his untiring zeal and goodness to our Order in the past. We had quite a gathering at our banquet. Toasts and speeches were the order of the evening, together with recitations and songs. Bro. Sands told of the progress that the Brotherhood has made during the past five years. Bro. Kine followed him with a speech and said that the Brotherhood was second to none. He concluded amidst a storm of cheers, for he is a "jolly good fellow." Bro. James Bryne, Past Master of the B. of R. T. Lodge 108, arose to reply to the toast, "Our Railroad Trainmen." His address was well received. Bro. Shimmick of the same lodge also told us the necessity of organizations standing by one another in time of adversity. Bros. Finckle and Cleverdon responded to the toast, "Our Order of Railway Conductors," in a fitting manner. Bro. Hutton of Lodge 69 also gave us some good advice. He is the father of Lodge 596, B. of L. F., and his cheery smile and ready wit had a wholesome effect on all present. Bro. Rabold, Master of Lodge 262, responded to the toast, "Our Neighbors," namely, the brothers on C. P. Ry. Bros. Shimmick and Swan then sang a few comic songs, which were received with much favor. A toast to Lodge 596 was replied to by Bros. Westlake and McCabe. Bro. Westlake said that their lodge had 98 per cent. of all the firemen on the Seventh district. In all there are only two non-union men working on that district. Bro. Reid, followed by Bro. Davison, then closed an enjoyable and very interesting evening in the history of this lodge. Bro. Reid has been a member of our Order for 25 years. It was long after midnight when we all sang "Auld Lang Syne," the national anthem, and then returned to our homes. I wish our Magazine a prosperous year

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Lodge 103—(Member, Louisville, Ky.) As I have not read anything from "Old Kentucky" for a long while, I thought I would let the boys know that we are still south of the Ohio, and while 103 is not making much headway, all the other lodges are doing fine. They have the good will of the officials and also of the companies for which they work, while we are just the reverse. "Old Regularity," Bro. Slaby, still swings the gavel for Lodge 502, and it is safe to say that he has one of the finest lodges south of the Ohio, and with the assistance of Bros. Bryan and Noonan they keep things moving pretty lively in 502.

That old-timer, Bro. Pickering, has resigned the Mastership of 578 on account of being in such a position he could not very well attend meetings. Bro. Frank Hobbins, another old-timer, has been elected to fill the vacancy, and they are getting along all right. They have the toughest goat I have ever seen in action. What he does to candidates is a sin and a shame, but they all come back to see the next victim get his money's worth, and he always gets it. Old 103 lost one of its brightest young members on October 4th, caused by the breaking of a side rod on his engine on a fast freight run on the Illinois Central road. Bro. Crofton was firing extra on the Louisville Division of the Illinois Central, and when the rod let go he was knocked off and his neck was broken. Bro. Crofton was only 23 years of age, and leaves a mother, one brother and three sisters to mourn his untimely death. He was a general favorite on account of his cheerful and sunny nature, for he had a laugh and a joke for everybody, and the boys will miss him from their ranks. May the good Lord, who saw fit to take him in his youth from those he loved, comfort and console his dear mother and family in their sad bereavement. The B. of L. F. went to his funeral in a body. We performed our ceremonies at the cemetery, and it made such an impression that the minister, Rev. W. B. Messick (who was an old friend of the family), in his prayer after benediction invoked the blessing of the Lord on the B. of L. F. and its members. We appreciated it very highly, as it was the first time to our knowledge in Louisville that we were ever paid a compliment of that kind.

The Ladies Society and 502 held a joint meeting recently and had a nice time. I wonder if it is as hard to make the members see the benefits of the Ladies Society in other parts of the country as it is here. We have a membership of 300 or more members of the B. of L. F. and only 20 members of the Ladies Society. It seems no matter what the ladies do, or how much talking a few of us old-timers do, we can not get the members interested enough to try and bring their wives into this organization, which is doing so much good for the Order all over the country, and could do so much more good here if the members would only help them with a word or two to their wives. Come on, boys, and help the Ladies Society and show the same spirit they do in helping us in every way they can at anything we undertake. I wish success to all the boys and also the Ladies Society.

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Lodge 107—(R. H. Hurley, Galion, Ohio.) This lodge had the pleasure of a visit from our Second Vice Grand Master Timothy Shea. We had a very interesting meeting, which was well attended. There were about thirty of our members present. Bro. Shea gave us a very interesting talk in regard to our duties as members of the B. of L. F. The members of this lodge hope it will only be a matter of a few months until Bro. Shea will visit us again. We also had the pleasure of having present at that meeting one of our oldest members, Bro. A. Gerhart. This brother does not attend meetings as much as he would like to, owing to the fact that he holds an official position with the Erie Railroad at this place. He feels that while holding this position he should not attend the meetings. He gave the brothers some very good advice as to their duties as firemen. The speeches delivered by both of these men were very instructive, and will always be appreciated by all the members of this lodge. Brother Gerhart was grand marshal of the Labor Day parade held in this city, and the members of this lodge feel proud of having him at the head of such a fine body of laboring men. There were fully a thousand men in line. We consider it a great honor to have a member of the B. of L. F. as grand marshal of this parade. Our lodge is in first-class condition. We have a membership of 125 and plenty of timber to build from. I think that before Christmas reaches us we will have enrolled 40 or 50 more new members. We have five applications on file right at present. We are all ready for them when they show up, and our goat is also waiting for them. I again hope that it will be only a short time until one of the Grand officers will make us another visit. We will be very glad to have them and will try and make it as pleasant as possible. I wish the best of success to you, the Grand officers and all the members of the Brotherhood.

* * *

Lodge 175—(J. I. Dollison, Newark, Ohio.) The boys of this lodge are well and most of them working and making good time, as business on the great trunk line, the B. & O. R. R., has picked up. We are looking forward and expecting the engineers that were put back to firing some time ago to again be reinstated to the right side. We all hope that business will remain brisk, then the boys will be able to meet all demands and will not have to ask anyone for help. They will be in a position to give the T. F. Roberts overalls a boost, and thereby help one of the most worthy members of this lodge to put his feet on the rock of progress. When you purchase a suit of the Roberts overalls you can feel assured that they are union made, every stitch and button, as T. F. is one of the tried and true and deserves the patronage of all members of this Order.

Second Vice Grand Master Timothy Shea was with us on the 29th of August. We held quite a lengthy session, and during the evening he gave us a very interesting talk and also gave us some good pointers on the running expenses of the lodge. He also instructed us in regard to the new constitution and ritual and explained the working of the new traveling card. As for myself, I spent quite a few hours with Bro. Shea showing him around our beautiful city and also the ancient work of the Mound Builders. This is a fine piece of work, and the fort at this park is not surpassed in the United States. On the outside of this fort and on the fair ground there is an abundance of fine shade trees where you can enjoy the shade with your family and friends, while you lunch on the refreshments of life.

* * *

Lodge 234—(Member, North Bay, Ont.) We are still doing business in the same old place. Business is not very brisk on our road here at present, but we are looking forward to better times. Six of our boys have been up for examination this week and that will make things look a little more promising. A very happy event took place here on the 13th inst. Bro. Ralph Sheppard took unto himself a wife. The boys all wish Bro. Sheppard every happiness, and Bro. Yandon says "cigars". The warm hand of the boys of this lodge is extended to our worthy Chairman, Bro. Joseph Hawkins, for his good work at our union meeting at Montreal. Our lodge room presented a scene of a very thrilling nature when Bro. Mark Thompson dismounted from the old goat of 234, under the banners of the Brotherhood. After this meeting was adjourned we all made a raid on Mr. Winter's ice cream parlors. Bros. A. Bell and Thomas Dooner are true blue Brotherhood men. I would like to hear from some of the other brothers of 234 soon.

* * *

Lodge 363—(Michael Nieb, New York.) It is with a heavy heart that I write this missive. Our beloved brother and Master, George Healey, had the misfortune of losing his left arm. It was taken off 5 inches below the shoulder. Bro. Healey was trying to board a buggy on the rear of a freight train leaving Mott Haven yards for the Hudson River. He lost his footing, causing him to be thrown under the cars. He had the presence of mind to throw his body from off the track. He was not a second too soon, as the cars glided by passing over his arm. The doctors at the hospital tried to save it, but gangrene set in, and as a consequence the arm had to be amputated. Bro. Healey is at home at present and is doing very nicely, and we expect to have him with us soon again.

I must say that this lodge has been keeping the goat pretty busy these last few months and will for a few months to come. The last four that rode our goat thought they were with Buffalo Bill, so you can almost surmise what good condition he is in.

* * *

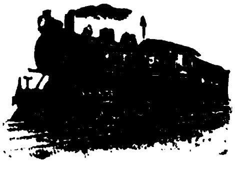
LODGE 287—(J. L. Campbell, Altoona, Penna.) It is with deep regret that I am called upon to announce the death of two of our worthy brothers, which occurred during the past two months. The death of both of these brothers was caused by the explosion of the boiler of the engine upon which each had been firing. Bro. Colcord was on his way to Wall, with Engineer John Ribblet at the throttle, when about 70 miles from Altoona the boiler exploded, killing both the engineer and Bro. Colcord. The death of our beloved brother has caused much sorrow among the members of this lodge. One beautiful morning, when the skies were clear and the sun was just peeping from over the mountains, which surround us here, Bro. John Lucas was called upon to go on his run between here and Harrisburg. He had a presentiment that there was something going to happen, but he felt that he had his duty to perform and that he would make the trip in safety. Little did he dream that this was to be his last trip and he was then going to meet his Maker. It was right in the yards in the city of Altoona that the people for miles around were startled to hear the tremendous noise made by the explosion of one of our big H. 6. A. engines, in charge of Engineer Nicholas Murphy and Bro. John Lucas, both of whom were instantly killed. The engine was No. 2245, hauling a mixed freight train east, and the catastrophe is said to have been caused by the water in the engine boiler being allowed to get too low. Just 200 yards west of the tower at Bellwood the engineer tried to put on his injector, but the water in the boiler was too low and the pressure of steam that filled it was too great. There was a dull roar, then a blinding sheet of flame as the boiler burst on the left side of the engine. Immediately preceding the explosion the heavy boiler arose and fell three times in rapid succession, its weight forcing the tracks down into the earth, and then burst into fragments with a report that could be heard for a mile. Our unfortunate brother was hurled clear across the tracks into a field near by, his neck being broken and his body badly mangled. He was quickly picked up and the ambulance summoned, but died before its arrival.

In spite of the terrible explosion the engine trucks never left the rail, but all that was left of the engine was the trucks and a portion of the cab. Considerable delay to traffic was caused by the explosion. About 14 of the cars the engine was pulling were derailed and wrecked. Bro. Lucas was about 25 years old and resided in this city about 12 years. He was a member of the Second United Brethren Church. He became a member of our Order last spring and from the start was a Brotherhood man in mind, body and soul, and also a good, honest, upright young citizen. The members of this lodge feel his loss very deeply. He leaves a wife and little baby daughter only 2 years old. The day after the funeral I had occasion to pass the residence and saw his wife and baby sitting on the porch, the poor mother in tears. The little baby was cooing and laughing, not realizing what an irreparable loss she had sustained in the death of her own dear papa. O gentle heart of Jesus, ever present in the Blessed Sacrament, ever consumed with burning love for the poor captive souls in this world, have mercy on the soul of thy servant, bring him from the shadows of exile to the bright home of heaven, where we trust thou and thy Blessed Mother have woven for him a crown of unfolding bliss. May his soul rest in peace.

* * *

LODGE 673—(Member, Harrisburg, Pa.) The brothers of Lodges 174 and 673 were accorded a surprise by the Ladies Society of No. 60 on Saturday evening, September 30th, in Mauk Hall. As many as could went there, wondering what we were to receive from their invitation to be present. After being treated to a fine program of both vocal and instrumental music and recitations, the doors were opened and in came a number of sisters with scoop shovels piled high with sandwiches, instead of coal, and following came other sisters bearing tallow pots containing coffee and cream. Waste in bunches was passed to do the duty of napkins. Of course we were at home and could use it all right. Ice cream was also served from the shovels. The boys highly appreciated the reception accorded them and will be ready to respond to any more calls promptly. I extend my best wishes to all the brothers.

* * * * *



Official

The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of September, 1905:

B. of L. F. Lodges, 135, $22; 509, $3; 564, $12. Total....	$37 00
L. S. to B. of L. F. Lodges, 3, $5; 9, $1; 15, $5; 34, $1; 36, $5; 53, $2; 64, $5; 65, $5; 78, $8; 88, $3; 90, $2; 95, $2.50; 104, $3; 141, $1; 142, $5; 151, $5; 153, $5; 159, $3; 162, $5; 171, $5. Total	76 50
O. R. C. Divisions............	23 67
B. of R. T. Lodges............	92 00
B. of L. E. Divisions..........	169 00
L. A. T. Lodges..............	150 25
G. I. A. Divisions............	233 00
L. A. C. Divisions............	88 00
Proceeds of picnic given at the home August 1st by Division 1, G. I. A................	32 00
W. H. Gerry Division, 1, O. R. C.	1 00
James Costello Division, 270, O. R. C..................	1 00
Members of Lodge 566, B. of L. F., Fresno, Cal............	9 00
James W. Davey, Lodge 313, B. of R. T..................	26 73
Webb C. Ball, Cleveland, O., for furnishing a reception room complete in home......	130 00
Grand total................	$1,069 15

Respectfully submitted,
JOHN O'KEEFE,
Sec. and Treas., R. R. M. H.

* * *

Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possession of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the lodge which issued same:

Card case, with receipt for quarter ending December 31, 1905, belonging to W. M. Westbrook, member of Lodge 45, B. of L. F., has been lost. If found, please return to J. M. Brickhouse, Secretary of Lodge 45, B. of L. F., 923 Water street, Little Rock, Ark.

* * *

Balls and Entertainments.

Courteous invitations have been received at this office to attend the following balls and entertainments. The Grand Lodge force returns thanks and wishes all an enjoyable and successful time.

Lodge 196.—Second annual ball, at Illinois Hall, Chicago, Ill., Friday evening, November 24, 1905.

Lodge 14.—Annual ball, at Tomlinson Hall, Indianapolis, Ind., Tuesday evening, October 24, 1905.

Lodge 496.—Third annual ball, at Columbian Hall, Jersey City, N. J., Thursday, November 16, 1905.

* * *

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

J. L. Kuhloff.—Known as "Baldy." When last heard of he was working for the International and Great Northern Railroad out of San Antonio, Texas. Any information regarding him will be appreciated by L. Stapp, passenger conductor, I. & G. N. Ry., San Antonio, Texas. Mr. Stapp is in possession of information very much to his advantage.

Edward Foster, Jr.—When last heard from was at Pine Bluff, Ark. A brother of Lodge 94 is very anxious to hear from him, as it would benefit Mr. Foster very much. Any information concerning him will be appreciated by W. H. Osborn, member Lodge 91, B. of L. F., 1058 Pine street, San Francisco, Cal.

Elmer Cunningham.—Was a member of Lodge 445, B. of L. F., at Glenn's Ferry, Idaho. When last heard from he was at San Francisco, Cal., working at Salian's sugar refinery. He is of medium height, has blue eyes and dark hair. Any one in possession of any information concerning him will please correspond with T. J. Cunningham, member Lodge 8, B. of L. F., 323 East Nelson street, Denison, Tex.

John Freitag.—Is a member of Lodge 240 in good standing. When last heard from he was in the City of Mexico, in July, 1903. His parents are very anxious to hear from him. Any one knowing of his whereabouts or in possession of any information concerning him, kindly communicate with A. W. Turner, Secretary of Lodge 240, B. of L. F., 314 East Mason street, Jackson, Mich.

H. S. France.—When last heard of was working out of St. Louis as an engineer. The undersigned is very anxious to hear from him. Any information regarding his whereabouts will be appreciated by A. R. Layman, 443 North Eighth street, East St. Louis, Ill.

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A Small, Sweet Way.

There's never a rose in all the world
But makes some green spray sweeter;
There's never a wind in all the sky
But makes some bird wing fleeter;
There's never a star but brings from Heaven
Some silver radiance tender;
And never a rosy cloud but helps
To crown the sunset splendor;
No robin but may thrill some heart,
His dawnlight gladness voicing;
God gives all some small, sweet way
To set the world rejoicing.
—Lady Maccabee.

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Beneficiary Statement

Office of Grand Secretary and Treasurer,
Peoria, Ill., October 1, 1905.

To Subordinate Lodges:

The following is a statement of receipts in the Beneficiary Department for the month of September, 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	......	69	......	137	......	205	......	273	13 50	341	......	409	189 00	477	......	545	......	613	......
2	123 00	70	2 25	138	......	206	......	274	114 75	342	......	410	......	478	192 00	546	......	614	......
3	4 50	71	......	139	2 25	207	......	275	312 00	343	......	411	......	479	......	547	......	615	......
4	......	72	......	140	......	208	......	276	3 00	344	......	412	4 50	480	......	548	......	616	
5	......	73	4 50	141	......	209	......	277	......	345	......	413	......	481	......	549	......	617	3 00
6	......	74	......	142	......	210	......	278	......	346	......	414	......	482	9 00	550	......	618	......
7	......	75	......	143	......	211	......	279	......	347	......	415	......	483	......	551	......	619	......
8	1 50	76	......	144	......	212	......	280	......	348	......	416	196 50	484	150 75	552	......	620	......
9	......	77	......	145	......	213	6 75	281	2 25	349	......	417	......	485	......	553	......	621	......
10	......	78	......	146	......	214	......	282	......	350	......	418	......	486	......	554	......	622	......
11	......	79	......	147	......	215	......	283	......	351	......	419	......	487	21 75	555	......	623	......
12	382 50	80	31 25	148	......	216	......	284	6 75	352	......	420	......	488	......	556	83 25	624	......
13	350 25	81	......	149	......	217	......	285	......	353	129 75	421	......	489	......	557	4 50	625	......
14	......	82	......	150	......	218	......	286	......	354	......	422	......	490	......	558	4 50	626	194 25
15	......	83	......	151	117 75	219	......	287	2 25	355	......	423	......	491	......	559	3 75	627	......
16	......	84	164 25	152	2 25	220	......	288	......	356	......	424	......	492	......	560	......	628	......
17	......	85	......	153	......	221	......	289	......	357	......	425	......	493	......	561	......	629	......
18	......	86	......	154	......	222	......	290	......	358	......	426	11 25	494	......	562	......	630	......
19	198 75	87	......	155	......	223	209 25	291	......	359	......	427	......	495	86 25	563	......	631	......
20	......	88	......	156	......	224	......	292	......	360	......	428	......	496	......	564	......	632	......
21	......	89	......	157	......	225	......	293	......	361	......	429	......	497	3 75	565	2 25	633	......
22	......	90	......	158	......	226	......	294	......	362	......	430	140 25	498	......	566	......	634	......
23	......	91	58 50	159	......	227	......	295	4 50	363	396 75	431	119 25	499	......	567	......	635	......
24	......	92	......	160	......	228	......	296	10 50	364	3 00	432	......	500	......	568	......	636	......
25	4 50	93	......	161	......	229	......	297	......	365	......	433	......	501	166 50	569	......	637	......
26	225 75	94	16 50	162	......	230	......	298	......	366	78 75	434	223 50	502	......	570	......	638	......
27	......	95	......	163	......	231	......	299	3 00	367	131 25	435	......	503	1 50	571	142 50	639	74 25
28	......	96	5 25	164	......	232	......	300	......	368	......	436	......	504	......	572	......	640	......
29	......	97	306 75	165	......	233	......	301	......	369	......	437	......	505	......	573	......	641	......
30	......	98	......	166	......	234	......	302	20 25	370	......	438	......	506	......	574	......	642	......
31	......	99	......	167	......	235	4 50	303	......	371	183 00	439	......	507	......	575	69 00	643	......
32	......	100	......	168	......	236	......	304	......	372	......	440	......	508	2 25	576	......	644	......
33	......	101	8 25	169	......	237	......	305	75	373	......	441	......	509	......	577	......	645	......
34	......	102	......	170	......	238	......	306	......	374	......	442	......	510	9 00	578	......	646	......
35	......	103	195 00	171	......	239	37 50	307	......	375	......	443	......	511	......	579	......	647	......
36	164 25	104	......	172	1 50	240	6 00	308	......	376	......	444	......	512	......	580	......	648	......
37	4 50	105	......	173	3 00	241	......	309	......	377	......	445	......	513	......	581	......	649	......
38	7 50	106	......	174	13 50	242	......	310	......	378	4 50	446	358 50	514	......	582	......	650	......
39	3 00	107	......	175	11 25	243	......	311	......	379	......	447	4 50	515	......	583	......	651	......
40	......	108	1 50	176	......	244	......	312	......	380	......	448	......	516	3 00	584	......	652	......
41	......	109	......	177	......	245	123 00	313	......	381	......	449	294 00	517	......	585	......	653	......
42	......	110	......	178	......	246	219 00	314	9 00	382	2 25	450	9 00	518	......	586	......	654	......
43	......	111	206 25	179	2 25	247	312 75	315	......	383	......	451	......	519	......	587	......	655	......
44	......	112	......	180	......	248	......	316	......	384	......	452	......	520	......	588	......	656	92 25
45	9 00	113	......	181	......	249	199 50	317	1 50	385	3 00	453	......	521	......	589	......	657	......
46	......	114	......	182	......	250	......	318	......	386	......	454	......	522	231 75	590	6 00	658	......
47	293 25	115	......	183	3 00	251	2 25	319	......	387	......	455	......	523	......	591	208 50	659	91 50
48	......	116	121 50	184	......	252	4 50	320	......	388	......	456	......	524	......	592	......	660	......
49	176 25	117	124 50	185	......	253	......	321	......	389	......	457	......	525	......	593	47 25	661	......
50	......	118	......	186	......	254	......	322	......	390	......	458	......	526	......	594	......	662	......
51	......	119	......	187	......	255	......	323	......	391	......	459	4 50	527	2 25	595	......	663	......
52	......	120	9 00	188	......	256	......	324	......	392	......	460	......	528	......	596	......	664	......
53	......	121	......	189	......	257	......	325	......	393	......	461	......	529	......	597	......	665	......
54	......	122	......	190	......	258	......	326	......	394	......	462	2 25	530	......	598	......	666	222 75
55	......	123	......	191	......	259	......	327	......	395	132 75	463	192 00	531	......	599	68 25	667	......
56	......	124	......	192	......	260	......	328	10 50	396	......	464	......	532	......	600	......	668	2 25
57	......	125	63 75	193	......	261	......	329	......	397	......	465	......	533	1 50	601	......	669	......
58	......	126	......	194	......	262	4 50	330	......	398	......	466	......	534	......	602	......	670	136 50
59	4 50	127	......	195	4 50	263	......	331	......	399	......	467	......	535	......	603	......	671	4 50
60	......	128	......	196	......	264	......	332	......	400	......	468	......	536	......	604	......	672	......
61	......	129	2 25	197	......	265	19 50	333	......	401	......	469	......	537	87 00	605	......	673	......
62	......	130	......	198	......	266	......	334	......	402	118 50	470	......	538	......	606	2 25	674	......
63	164 25	131	......	199	......	267	......	335	1 50	403	2 25	471	......	539	......	607	......	675	63 75
64	......	132	......	200	......	268	......	336	......	404	......	472	......	540	......	608	117 75	676	......
65	......	133	324 00	201	......	269	75	337	16 50	405	......	473	......	541	......	609	......	677	53 25
66	......	134	......	202	......	270	......	338	4 50	406	54 75	474	......	542	......	610	......	678	......
67	......	135	......	203	......	271	......	339	......	407	......	475	......	543	......	611	......	679	......
68	......	136	......	204	......	272	......	340	......	408	......	476	2 25	544	9 00	612	......	680	......

Received during month of September..$11,284.25

Disbursed during month of September, account Beneficiary Claims..	47....	$1,500	$70,500	$77,500,00
	6....	1,000	6,000	
	2....	500	1,000	

Respectfully submitted

W. S. CARTER,
G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from Augut 31, 1905, to September 30, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid
1056	Ira J. Sawyer	169	Death	June 3, 1905	Consumption	$1,500	Sept. 6, 1905
1071	Leroy R. Cooper	392	"	" 9, "	Derailing of engine	1,500	" 6, "
1120	Harvey F. Yeager	220	Disability	Aug. 16, "	Paralysis	1,500	" 6, "
1095	Delos J. Barber	238	Death	June 12, "	Tuberculosis of lungs	1,500	" 6, "
1043	Charles O. Sinclair	502	"	May 18, "	Collision	1,500	" 19, "
1070	Thomas Callahan	666	"	June 5, "	Heart failure	1,500	" 19, "
1125	Charles Lange	240	"	July 13, "	Appendicitis	1,500	" 19, "
1126	Michael Gennoy	149	"	" 12, "	Consumption of lungs	1,500	" 19, "
1127	Reinhold Redemsky	431	Disability	Aug. 18, "	Paralysis	1,500	" 19, "
1128	Will E. Severance	425	Death	June 7, "	Drowning	1,500	" 19, "
1132	John Holik	148	"	Apr. 4, "	Cancer of stomach	1,500	" 19, "
1133	John Lee	250	"	July 9, "	Knife wound	1,500	" 19, "
1134	Thos. A. Lilly	222	"	June 30, "	Concussion of brain	1,500	" 19, "
1135	Isaac N. Chandler	455	"	July 8, "	Crushed between engine and car	1,500	" 19, "
1136	William F. West	560	"	" 14, "	Derailing of engine	500	" 19, "
1138	Robert F. Michael	557	"	June 29, "	Collision	1,500	" 19, "
1139	Eugene L. Ahn	562	"	July 7, "	Struck by mov'g engine	1,500	" 19, "
1141	Frank E. Dupell	16	"	" 21, "	Apoplexy	1,500	" 19, "
1142	James C. Hall	380	"	June 15, "	Gunshot wound	1,500	" 19, "
1143	George Poell	277	Disability	" 27, "	Amputation left foot	1,500	" 19, "
1144	George Steiner	97	Death	June 10, "	Tetanus	1,000	" 19, "
1145	John W. Thomas	62	"	July 19, "	Collision	1,500	" 19, "
1148	James Walters	71	"	" 8, "	Cerebral hemorrhage	1,500	" 19, "
1149	William Scharf	508	"	" 18, "	Aedema of the lungs	1,500	" 19, "
1150	William Morrissey	215	"	" 23, "	Typhoid fever	1,500	" 19, "
1151	Earl A. Brandon	382	"	" 19, "	Boiler explosion	1,500	" 19, "
1152	Arthur Cockwill	631	"	" 13, "	Derailing of engine	1,500	" 19, "
1153	William Parrett	521	"	" 8, "	Collision	1,000	" 19, "
1154	George. F. Wills	464	"	" 16, "	Typhoid fever	1,000	" 19, "
1155	Samuel Cottrell	231	"	" 8, "	Collision	1,500	" 19, "
1156	Hugh T. Farrow	367	"	June 7, "	Crushed between engine and car	1,500	" 19, "
1157	John W. Wibberly	587	"	July 18, "	Peritonitis	1,500	" 19, "
1159	Charles E. Wild	508	Disability	Aug. 17, "	Consumption of lungs	1,500	" 19, "
1160	Henry J. Watson	521	Death	July 23, "	Falling between engine and tender	1,000	" 19, "
1162	Peter F. Hannon	602	"	" 21, "	Inflammation of brain	1,500	" 19, "
1164	William H. Allen	540	"	" 31, "	Derailing of engine	1,500	" 19, "
1166	John J. Simmons	446	"	" 9, "	Tuberculosis	1,500	" 19, "
1167	James A. Clark	99	"	" 18, "	Collision	1,500	" 19, "
1169	John Taylor	546	"	" 22, "	Derailing of engine	1,500	" 19, "
1171	Roger B. Price	194	"	" 29, "	Drowning	1,500	" 19, "
1172	Thomas J. McGrath	101	"	" 21, "	Phthisis	1,500	" 19, "
1173	W. M. Felton	6	Disability	" 14, "	Amputation right foot	1,000	" 19, "
1174	John Crouse	10	Death	Aug. 1, "	Cancer of stomach	1,500	" 19, "
1175	Charles E Heichemer	10	"	July 30, "	Derailing of engine	1,500	" 19, "
1179	John A. Lucas	287	"	Aug. 10, "	Boiler explosion	1,500	" 19, "
1185	Roy A. Hayward	248	"	June 3, "	Collision	500	" 19, "
1177	James H. Gilliam	302	"	July 27, "	Consumption of lungs	1,500	" 19, "
1180	Isaac E. Muse	633	"	Aug. 3, "	Collision	1,500	" 19, "
1181	Arch Doolin	45	"	July 29, "	Derailing of engine	1,500	" 19, "
1182	W. N. Horton	45	"	" 29, "	Derailing of engine	1,500	" 19, "
1183	William J. Miller	182	"	Aug. 8, "	Derailing of engine	1,500	" 19, "
1184	Harry E. Brown	192	"	" 6, "	Run over by engine	1,500	" 19, "
1165	John Wessel	582	Disability	" 15, "	Total blindness	1,500	" 19, "
1168	Clarence B. Bryant	327	Death	July 15, "	Boiler explosion	1,500	" 19, "
1170	George W. Conant	401	"	" 29, "	Drowning	1,000	" 20, "

55 death and disability claims, aggregating $77,500.

Pending Claims September 30, 1905.

59 death claims aggregating	$84,750
20 disability claims aggregating	31,000
Total of 79 claims aggrogating	$115,750

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Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending October 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1237	Charles Forgert	91	Death	Sept. 16, 1905	Drowning	$1,500
1238	John M. Kistler	451	“	“ 16, “	Derailing of engine	500
1239	Thomas J. Reilley	326	“	“ 16, “	Struck by cars	1,500
1240	Ignace F. Winterberg	584	Disability	“ 18, “	Loss of left eye	1,500
1241	William D. Holton	37	Death	“ 18, “	Apoplexy	3,000
1242	William T. Ashline	209	“	“ 18, “	Struck by moving engine	2,000
1243	George B. Aiken	460	“	“ 19, “	Yellow fever	1,500
1244	Milton E. Smith	238	“	“ 19, “	Collision	1,500
1245	Warren C. Benjamin	379	Disability	“ 21, “	Paralysis	1,500
1246	Wilmer G. Patten	282	“	“ 22, “	Diabetes mellitus	1,500
1247	Alonzo V. Stegner	195	“	“ 27, “	Fractured skull	500
*1248	William Wynne	265	“	“ 27, “	Bright's disease	1,500
1249	Ralph L. Dwight	169	Death	“ 27, “	Falling under moving train	1,500
1250	Herbert A. Smith	59	“	“ 27, “	Derailing of engine	1,000
1251	Joseph McIlwain	195	“	“ 28, “	Tuberculosis of thigh	1,500
1252	Farrell Kane	339	Disability	“ 28, “	Consumption of lungs	1,500
1253	Lawrence Westerfield	600	Death	“ 29, “	Falling from moving train	1,000
1254	George R. Creel	223	“	“ 29, “	Collision	1,500
1255	Guy S. Beard	675	“	Oct. 3, “	Falling from train	1,000
1256	John A. Mayfield	589	“	“ 3, “	Derailing of engine	1,500
1257	J. P. Sweeney	140	“	“ 3, “	Heart failure	1,500
1258	Walter P. Joseph	21	“	“ 3, “	Collision	1,500
1259	James E. Brown	390	“	“ 3, “	Derailing of engine	1,500
1260	Michael J. Lally	372	“	“ 3, “	Suicide	1,500
1261	James H. Weaver	162	Disability	“ 3, “	Blindness	1,500
1262	Charles F. Jackson	288	Death	“ 3, “	Typhoid fever	1,000
1263	William C. Taylor	504	“	“ 5, “	Derailing of engine	1,500
1264	Daniel Pfister	676	“	“ 5, “	Typhoid fever	1,500
1265	William J. Canon	416	“	“ 5, “	Collision	1,500
1266	Ernest F. Phillips	202	Disability	“ 6, “	Amputation of left foot	1,500
1267	James S. Whitmore	646	Death	“ 6, “	Struck by passing train	1,500
1268	Norman L. Morley	262	“	“ 9, “	Crushed by car	1,500
1269	Charles H. Himes, Jr	333	“	“ 9, “	Crushed betw. engine and tender	1,500
1270	Knute Rovelstad	113	“	“ 9, “	Collision	3,000
1271	John D. Mackall	96	“	“ 9, “	Bright's disease	1,500
1272	N. C. Williams	183	“	“ 9, “	Cerebral paresis	1,000
1273	George Morgan	502	“	“ 9, “	Appendicitis	1,500
1274	Joseph Dumas	259	“	“ 9, “	Apoplexy	1,500
1275	James D. Little	177	“	“ 9, “	Pernicious fever	1,500
1276	John Woolsey	281	“	“ 10, “	Derailing of engine	1,500
1277	Melville B. Lever	418	“	“ 10, “	Apoplexy	1,500
1278	Milo C. Sands	27	“	“ 10, “	Collision	1,500
1279	Alexis V. Birkmeyer	146	“	“ 10, “		1,500
1280	Charles Berry	25	Disability	“ 10, “	Amputation of left hand	3,000
1281	Thomas Fahey	162	Death	“ 10, “	Chloroform anasthesia	500
1282	Joseph S. Brennan	256	“	“ 10, “		1,500
1283	Harry O. Putnam	383	Disability	“ 11, “	Burns	1,500
1284	William Wynne	265	Death	“ 11, “	Chronic nephritis	1,500
1285	Fred L. Durkee	284	Disability	“ 11, “	Consumption of lungs	1,500
1286	Peter E. Olson	170	Death	“ 11, “	Falling from moving train	1,000
1287	William H. Englehardt	10	Disability	“ 11, “	Articular rheumatism	1,500
1288	William A. Best	52	“	“ 12, “	Paralysis	1,500
1289	Andrie J. Meier	455	Death	“ 12, “	Derailing of engine	2,000
1290	John J. Lynch	48	“	“ 12, “	Tuberculosis	1,500
1291	Charles L. Brust	432	“	“ 13, “		500
1292	Carl Crofton	103	“	“ 13, “	Falling from moving engine	1,500
1293	Harry E. Dill	199	“	“ 14, “	Septicemia	1,500
1294	Charles F. Lenk	142	“	“ 14, “	Struck overhead bridge	1,500
1295	John C. Roseborough	378	“	“ 14, “	Struck overhead bridge	1,500

*Applicant died, claim will be settled as death claim No. 1284.

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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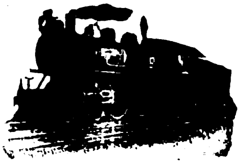

Beneficiary Assessment Notice No. 137.

To the Treasurers of Subordinate Lodges: Peoria, Ill., November 1, 1905.

Dear Sirs and Brothers:—You are hereby notified that assessments for death and disability claims are hereby levied as follows: For each beneficiary member whose name appears on the rolls of membership on October 31, 1905 (also for all beneficiary members having taken a withdrawal or transfer card after October 1, and for all members who died or were totally disabled since October 1), carrying a Beneficiary Certificate of Three Thousand ($3,000) Dollars, you are required to forward the sum of Four Dollars and Fifty ($4.50) Cents. For those carrying a Certificate of Two Thousand ($2,000) Dollars, you are required to forward the sum of Three Dollars ($3.00). For those carrying a Certificate of Fifteen Hundred ($1,500) Dollars, you are required to forward the sum of Two Dollars and Twenty-Five ($2.25) Cents. For those carrying a Certificate of One Thousand ($1,000) Dollars, you are required to forward the sum of One Dollar and Fifty ($1.50) Cents, and for each member carrying a Certificate of Five Hundred ($500) Dollars, you are required to forward the sum of Seventy-Five ($0.75) Cents. Said remittances to reach the Grand Lodge not later than November 20, 1905, as provided in Section 62 of the Constitution.

Yours fraternally,
W. S. CARTER,
G. S. and T.

Special Notice.—All remittances must be made by Bank Draft, Money Order, or Express Order. Beneficiary members initiated on and after November 1st are not liable for this assessment.

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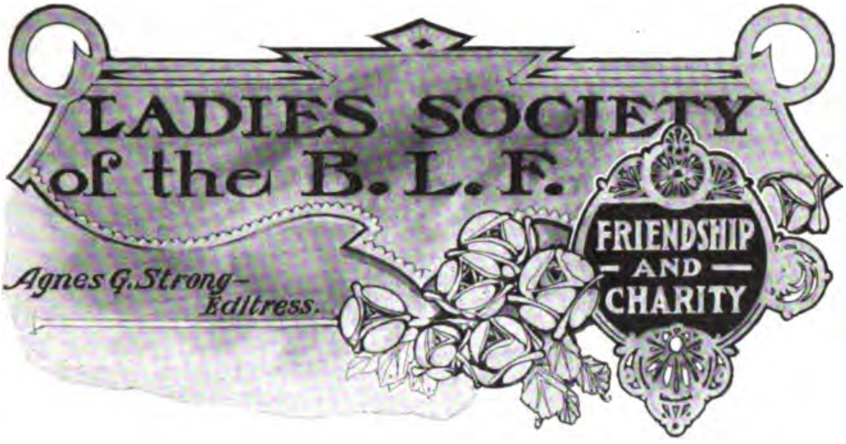
Why Do We Forget?

When friends have done the loving deed
Or reached the kindly hand,
Or given help in time of need,
Why do we sometimes stand
And check the flowing of the tears
And keep the lips firm set
Till love, indifference appears?
Oh why do we forget?

Do we forget? "Oh no! Oh no!"
"The kindly deed we keep
Within our hearts where'er we go,
Or waking, or asleep."
Then why not say the thankful word,
And let the teardrops flow?
And show the depths within us stirred?
Oh why dissemble so?

We can not tell; but this is true,
With souls that deepest feel;
We can not do what we would do,
Unwilling to reveal
The measure of our sympathy,
And so, we sometimes let
The friends we love most faithfully
Think that we can forget.

—Julia Harris May, in Club Woman.



LADIES SOCIETY of the B. L. F.

Agnes G. Strong—Editress.

FRIENDSHIP — AND — CHARITY

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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The First Thanksgiving.

The first New England Thanksgiving was not a day of religious observance, it was a day of recreation. Those who fancy all Puritans, and especially Pilgrims, to have been sour, morose and gloomy men should read this account of the first Thanksgiving week (not day) in Plymouth. It was written on December 11, 1621, by Edward Winslow to a friend in England:

"Our harvest being gotten in, our governor sent four men on fowling that so we might after a special manner rejoice together after we had gathered the fruits of our labors. They four killed as much fowl as with a little help beside served the company about a week. At which times among other recreations we exercised our arms, many of the Indians coming amongst us, and among the rest their greatest king, Massosoit, with some ninety men whom for three days we entertained and feasted, and they went out and killed five deer which they brought and bestow'd on our governor, and upon the captains and others."

As Governor Bradford specified that during that autumn "beside waterfoule ther was great store of wild turkies," we can have the satisfaction of feeling sure that at that first Pilgrim Thanksgiving our forefathers and foremothers had turkeys.

Thus fared the Pilgrims better at their Thanksgivings than did their English brothers, for turkeys were by no means plentiful in England at that time.

Though there were but fifty-five English to eat the Pilgrim Thanksgiving feast, there were "partakers in plenty." and the ninety sociable Indians did not come empty-handed, but joined fraternally in provision for the feast, and probably in the games.

These recreations were, without doubt, competitions in running, leaping, jumping, and perhaps stool-ball, a popular game played by both sexes, in which a ball was driven from stool to stool, or wicket to wicket.

During that chilly November week in Plymouth, Priscilla Mullins and John Alden may have "recreated" themselves with the ancient form of croquet—if any recreation was possible for the four women of the colony, who, with the help of one servant and a few young girls or maidekins, had to prepare and cook food for three days for one hundred and twenty hungry men, ninety-one of them being Indians.

Doubtless the deer, and possibly the turkeys, were roasted in the open air. The picture of that Thanksgiving Day, the block house with its few cannon, the Pilgrim men in buff breeches, red waistcoats, and green or sad-colored mandillions; the great company of Indians, gay in holiday paint and feathers and furs; the few sad, over-worked, homesick women in worn and simple gowns, with plain coifs and kerchiefs, and the pathetic handful of little children, forms a keen contrast to the prosperous, cheerful Thanksgivings of a century later.

There is no record of any special religious service during this week of feasting.—*Alice Morse Earle, in "Customs and Fashions in Old New England."*

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November.

Trees bare and brown,
Dry leaves everywhere,
Dancing up and down,
Whirling through the air.

Red-cheeked apples roasted,
Popcorn almost done,
Toes and chestnuts toasted,
That's November fun.
—Selected.

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Mount Vernon Lodge No. 202.

On September 28, 1905, it was my good fortune to attend a social meeting of Mount Vernon Lodge No. 202. This lodge has been but recently organized, with a charter membership of fourteen, and starts off under the most favorable conditions. Potomac Lodge No. 7, of the Brotherhood, of which the new lodge is an auxiliary, has made a most excellent record. It represents among the enginemen of the District of Columbia men of sterling worth. It still numbers on its rolls many of its original charter members, with the sons of those members soon to follow, while in the new lodge will be found daughters of its members. The members of the families of the brothers of No. 7, who will make up the membership of this late addition to the Society, represent some of the best people of the capital. Surely, under such happy auspices the future success of Mount Vernon Lodge No. 202 should be assured.

After the business of the lodge was transacted an adjournment was had for the purpose of meeting in social session with the brothers of No. 7. This meeting brought together the families and friends, and the sisters did themselves proud in making every one feel at ease and extended substantial evidence of their generous hospitality in an abundance of good things so greatly appreciated by the boys of the rail.

There is plenty of musical talent among the sisters of Mount Vernon Lodge, and, what is best, a willingness on their part to entertain. Dancing was enjoyed by many of those present, and the two-step and waltz caused the boys to forget the hard trip. A few of us old folks attempted the quadrille, but I doubt if it will ever happen again. The evening was a most happy one, and evidently it was enjoyed by all.

While we have no official information as yet, we venture to predict that the sisters of No. 202 will give to the brothers of No. 7 the opportunity of attending these social sessions at frequent intervals during the coming season; and the writer advises every brother and member of his family to attend.

The organization of Mount Vernon Lodge No. 202 should be heartily endorsed by every member of the Brotherhood in Washington and every encouragement held out to them. Brothers with families containing eligibles for membership in the Society should encourage them to join. Brothers without families should at once arrange dates for that intended marriage which has been too long postponed. There are some splendid opportunities among the sisters and the women friends of this lodge. The writer was glad of the opportunity of being present on this the first open session of the lodge. He was especially favored by meeting the Grand President, who made a lasting impression on him, and who seemed quite elated over the new lodge, and complimented the members on the skill displayed in the exemplification of the work.

Washington, D. C. F. P. SARGENT.

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From Sadie Schonell, Member of Grand Board of Trustees.

To the members of our Order: Let me say that we have every reason to be proud of the advancement made during the past year. Election time has come again, and you have elected your new officers for the coming year, and as each and every officer assumes their obligation be sure and give them every assistance you possibly can. It is the duty of each member to assist and encourage those who hold their positions pursuant to the will of the majority of your membership. Give the kind word, the courteous reply, the kindly sympathy, and they will be true to the trust you have reposed in them.

Hope Lodge No. 4 is in a prosperous condition, judging from the number of applications which are being received. We have just initiated four into the mysteries of our Order, and have more to initiate in a few weeks. Let us all work with a determination to increase our membership to the 5,000 number before the close of the year. If each society would increase their membership only three more, it would more than reach the 5,000 mark.

I am sure if the firemen's wives knew the benefits to be derived and the close friendship that exists between the members they would not hesitate to be numbered with us.

Let us all strive to make this year one long to be remembered, and may it be said by our Grand President, when we meet in Convention in Milwaukee, Wisconsin, in 1906, that the year 1905 was the grandest year in the history of the Ladies Society.

We extend our best wishes to all sisters and especially to all of our new sister lodges.

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Smiles.

Smile a little, smile a little,
  As you go along,
Not alone when life is pleasant,
  But when things go wrong.
Care delights to see you frowning,
  Loves to hear you sigh;
Turn a smiling face upon her,
  Quick the dame will fly.

Smile upon your undone labor;
  Not for one who grieves
O'er his task, waits wealth or glory;
  He who smiles achieves.
Though you meet with loss and sorrow
  In the passing years,
Smile a little, smile a little,
  Even through your tears.
    —Ella Wheeler Wilcox.

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Too Much for Him.

A young man, with a large book under his arm and a seven-by-nine smile on his mug, stuck his head into the ticket window at the union depot, and asked the clerk what the fare was to San Antonio.

"Ten dollars and fifteen cents," replied the ticket slinger.

"I am going to leave Galveston, but I lack just ten dollars of the ticket money. However, that shan't part us; I'll make a partial cash payment of fifteen cents and take the rest out in trade."

"What do you mean by taking it out in trade?"

"I am a book agent, and if you will let me have the ticket, I won't try to sell you a book. I won't say book to you once. This is the most liberal and advantageous offer ever made to the public, and you ought to take advantage of it. I have been known to talk a sane man so completely out of his senses in fifteen minutes that he wasn't fit to send to the legislature afterwards."

"What book are you selling?" asked the ticket agent.

A beaming smile came over the book agent's face, and in a sing-song voice he began, "I am offering, in seventeen volumes, Dr. Whippletree's Observations in Palestine—a book that should be in every family, a book that comprises the views of the intelligent doctor on what he saw in the Holy Land, with numerous speculations and theories on what he did not see, altogether forming a complete library of deep research, pure theology and chaste imagery. I am now offering this invaluable encyclopedia for the unprecedented low price of two dollars a volume, which is really giving it away for nothing."

After the book agent had kept this up for about ten minutes, he began to grow discouraged, for, instead of showing signs of weakening, the ticket agent, with an ecstatic smile on his face, begged the eloquent man to keep on. The book agent stopped to rest his face, when the ticket man reached out his hand and said: "Shake, old man! Come inside and take a chair, and sing that all over again. That cheers me up like a cocktail. I used to be a book agent myself, before I reformed and went into the railroad business, and that is like music to my ear. It soothes me all over. It calls back hallowed memories of the past, and makes me want to go out on the road again. I would rather pay twenty dollars than have you leave Galveston. You must come 'round every day. I could listen to that all day, and cry for more."

The book agent shut his book and said: "Some infernal hyena has given me away, but there is another railroad that I can get out of this one-horse town on. I'll not consent to travel on any road that does not employ gentlemen who can treat a cash customer with common politeness. You can't obtain my book on any terms, and if you will come out of your cage I'll punch your head in less time than you can punch a ticket."

And he passed out like a beautiful dream.

Sallie B. Roeder,
Pres. No. 33, Paducah, Ky.

Notes.

Good laws can do very much for an order, but let us not be deceived. The fullest measure of success can only come when every member shall realize that he is needed; that the combined welfare of each individual constituent of a co-operative organization tells the sum of the order's good, and that to accomplish most the order must at all times enjoy the confidence and support of the members. —Bee Hive.

Final success attends the efforts of those determined to do right regardless of temporary results.

Do not imagine, when an applicant has been voted on for admission, that the duties of the sister who solicited the application are over. Too often, the candidate fails to ever present herself for initiation. The sister who solicited the application should accompany the candidate to the office of the medical examiner and identify her; then, when the examination is approved, she should arrange for the applicant's initiation and conduct her to the lodge room for such purpose. Courtesies extended in this way have a most beneficial and lasting effect.

It is not work that kills men; you can hardly put more work on a man than he can bear. Worry is rust upon the blade. It is not the revolution that destroys the machinery, but the friction. — Henry Ward Beecher.

Cheer and comfort those whose horizon is cloudy with affliction and disappointments by your smiles and words of love.

It is a trite saying, that "Iron sharpeneth iron," hence it is that by mingling and associating with noble people, that our countenances are sharpened, our characters refined, our happiness expanded, and our charity broadened.

To be able to inspire our fellow-beings with a larger and higher conception of the true character and aims of a society or "band of women" this must be the foundation of a sisterhood. Intelligence and feeling must be the forces at work among its members. The members must have the courage to be just, the courage to crush self and the courage to do their duty. They must have the mind to conceive and the heart to understandconditons which need to be remedied: the intelligence which can wisely plan and the will which can vigorously execute; the energy which never tires, the interest which never flags and the optimism which never fails. These are the qualities which command the successful future and lead to the highest planes of ideal sisterhood.

From anything I have ever heard or known, I believe good, and only good, has come from the Ladies Society of the B. of L. F.

Everything great is not always good, but all good things are great.—Demosthenes.

Learn how to laugh. A good laugh is better than medicine. Learn how to tell a story. A good story is as welcome as a sunbeam in a sick-room. Learn to keep your own troubles to yourself. The world is too busy to care for your ills and sorrows. Learn to stop croaking. If you can not see any good in this world, keep the bad to yourself. Learn to hide your aches and pains under a pleasant smile.—Selected.

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Pleasant Thoughts.

Happiness does not come until we have ceased to seek for it, nor does peace abide except through self-sacrifice.

The highest of character is his who is as ready to pardon the moral errors of mankind as if he were every day guilty of the same himself, and at the same time as cautious of committing a fault as if he never forgave one.—Pliny the Younger.

You find yourself refreshed by the presence of cheerful people. Why not make earnest effort to confer that pleasure on others? You will find half the battle is gained if you never allow yourself to say anything gloomy.—L. M. Child.

Why should a true and sincere appreciation be termed flattery and degraded to the level of insincere praise? Why should an individual be accused of acting from base and selfish policy because he feels the glow and warmth of social response?—Lillian Whiting.

Disappointment, ailment or even weather depresses us, and our look or tone or depression hinders others from maintaining a cheerful and thankful spirit. We say an unkind thing, and another is hindered in learning the holy lesson of charity that thinketh no evil. We say a provoking thing, and our sister or brother is hindered in that day's effort to be meek. How sadly, too, we may hinder without word or act! For wrong feeling is more infectious than wrong doing; especially the various phases of ill-temper—gloominess, touchiness, discontent, irritability. Do we not know how catching these are?—Frances Ridley Havergal.

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Out in the Fields.

The little cares that fretted me,
I lost them yesterday,
Among the fields above the sea,
Among the winds at play,
Among the lowing of the herds,
The rustling of the trees;
Among the singing of the birds,
The humming of the bees.

The foolish fears of what might happen,
I cast them all away
Among the clover-scented grass,
Among the new-mown hay;
Among the husking of the corn
Where drowsy poppies nod,
Where ill thoughts die and good are born,
Out in the fields with God.
—Elizabeth Barrett Browning.

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The Ladies Society.

Well, the beautiful, golden, hazy autumn is here again, at last. I say at last, because the summer has been very long and very hot, and while it has left, with many of us, some pleasant memories, it has brought to others, homes of our best friends, desolation and sorrow and indescribable sadness. Yet, autumn, with its luxuriant beauty, is always welcome, and brings a quiet, peaceful happiness peculiarly its own.

Dear sisters, now while the Indian summer, with its crisp mornings and cool evenings, and that indescribable charm which only this season brings, makes it almost impossible to stay indoors, will you not improve this excellent opportunity and form a real good habit—that is, coming to lodge? (I am talking principally to Primrose Lodge No. 80, just now.) You must realize the fact that, "Our Lodge is just what we make it."

Be retrospective for a moment, and ask yourself: What am I doing for the Ladies Society? And if the answer that little monitor known as conscience gives you hurts your feelings, just get a move on yourself (if I may be allowed to use a slang phrase) and do some work for your society.

We fully realize the fact that it requires a certain amount of managing—for most all of us are busy housewives and have our household duties to perform—but with a little managing we can do that and attend lodge too. And, sisters, do we not owe it to our Order to attend lodge meetings? How little it asks—only two meetings a month. Can we not spare two afternoons out of twenty-six working days? We are exceedingly busy women, but we have found time for some very enjoyable times. On August 9th our society was entertained at the beautiful home of Sister Cashion, which proved to be a very interesting as well as profitable afternoon. Instead of the usual program on such occasions, that is, "sitting around talking"—Sister Cashion had invested in a quantity of dry goods, and the sisters were invited into the immaculate sewing-room, some to cut out aprons, while others performed on the two sewing machines secured for the occasion. Each one plied her needle amid cheerful chatter. And when the shadows began to lengthen eastward, Sister Cashion and Sister Buenna Smith were seen to be moving around the little dining-room in a very mysterious manner. The mystery, however, was soon solved when all were invited in to the splendid luncheon which these sisters had prepared for us. We surely had a most delightful time; and the aprons—well, we made six in one afternoon, and they were sold and the proceeds given our society to swell the reserve fund we are building.

Magnolia Lodge, of Argentine, Kas., has our heartfelt sympathy in the loss of one of her most loyal members and faithful officers, Mrs. Sallie Faust, whose death occurred August 15th.

At our next regular meeting we expect to initiate another candidate through the mysteries of our Order. Nothing is more encouraging than gaining new members. Let the Order grow, and may the year 1905 end in grand results and be the most successful that the Ladies Society has ever seen, is the wish of

Your Sister, **Ora Boon,**
Little Rock, Ark.

◆ ◆ ◆

Thanksgiving Song.

The happy thank-you day has come
And harvest time is past,
We've gathered fruits and nuts and grains,
We'll say good-by at last;
Good-by to Autumn, Autumn dear,
And with our parting words
We'll sing our thanks to God above
For fruits and trees and birds.
—Selected.

◆ ◆ ◆

Friendship and Charity.

When a member of the Brotherhood of Locomotive Firemen goes to a strange town the brothers there do all that they can to make it pleasant for the stranger brother.

How about the sisters? Do they do all that they can for the stranger sister?

For eight long, weary months I have been going about from place to place in search of health. Before coming here I looked the directory over and was delighted to find that there was a Ladies Society here. I rejoiced that I was not going among strangers but among sisters.

After I had been here about ten days, I went to one of the sisters and made myself known to her, showing my receipts, gave her my name and the name and address of the Secretary and President of my lodge, so that if there were any doubts in their minds as to my being other than what I represented myself to be they could write either of the sisters and find out. I have been here two months and not one of the sisters has been to see me. Imagine my disappointment, sisters. If I am a member in good standing of our lodge, I believe I am due respect, at least, from the sisters of another. Now, I write this letter not for my own benefit, but with the thought that it may benefit others.

Sisters, you who have your homes and loved ones and friends are indeed fortunate, but remember you may have to leave them and go among strangers.

Sisters, are we not banded together to help one another? So let us all help the stranger who may come within our gates. Let us throw the mantle of friendship and charity around about them.

With best wishes for our Ladies Society and our Editress, **A Member.**

◆ ◆ ◆

Who Leads?

Below is given the membership of the ten largest lodges of the L. S. to the B. of L. F., as reported October 1, 1905:

1. No. 142, Empire, Buffalo, N. Y., 122.
2. No. 70, Holly, Buffalo, N. Y., 103.
3. No. 3, Hazel, Peoria, Ill., 86.
4. No. 60, Pride of 174, Harrisburg, Pa., 85.
5. No. 146. Virginia, Chicago, Ill., 75.
6. No. 58, Sisters of 99, Rochester, N. Y., 75.
7. No. 125, Charity, Jackson, Mich., 70.
8. No. 10, Helpmate, Elkhart, Ind., 67.
9. No. 113, Ft. Orange, Albany, N. Y., 64.
10. No. 51, Grayson, Tex., 57.

◆ ◆ ◆

The Two-Finger Shake.

Volumes are revealed in the handshake. The clasp of friendship is warm, hearty and knows no fashion. When a girl gives you two fingers, you may be sure she has an extravagant opinion of her own merits and a correspondingly cheap one of yours. The society handshake is purely idiotic, utterly affected, and practically relegated to such people as chappies and silly women.

We hope that none of our girls have fallen in with the foolishness referred to: but, if they have done so, it is in order for them to retire to a back seat and proceed to the work of reformation. There is nothing, girls, in all the world like the simple, old-fashioned way of being warm-hearted and genuinely pure, and above the foolish "fads" of the day.—Selected.

◆ ◆ ◆

The Windows of the Mind.

If the windows of your mind are thrown wide to the sunlight there is no place for the darkness.

If they are thrown wide to good cheer there is no room for sadness.

If they are opened to sweet thoughts there is no quarter for the bitter.

If they are bright with hope there is

no lurking spot for despair; if they are bright with courage there is no harborage for fear.

If they are filled with tranquillity and peace there is no room for discontent.

If they are filled with sweet temper there is no place for anger; if they are filled with tenderness and sympathy there is no shelter for "sweet revenge."

If they are filled with gratitude there is no place for benefits forgot.

If they are filled with the milk of human kindness there is no room or refuge for ill will.—Chicago Tribune.

◆ ◆ ◆

Thanksgiving Story.

The ripe, rosy apples are all gathered in;
They wait for the winter in barrel and bin;
And nuts for the children, a plentiful store,
Are spread out to dry on the broad attic floor;
The great golden pumpkins, that grew such a size,
Are ready to make into Thanksgiving pies;
And all the good times that the children hold dear
Have come 'round again with the feast of the year.

Now what shall we do in our bright, happy homes
To welcome this time of good times as it comes?
And what do you say is the very best way
To show we are grateful on Thanksgiving Day?
The best thing that hearts that are thankful can do
Is this: to make thankful some other hearts, too;
For lives that are grateful, and sunny, and glad,
To carry their sunshine to lives that are sad;
For children who have all they want and to spare,
Their good things with poor little children to share;
For this will bring blessing, and this is the way
To show we are thankful on Thanksgiving Day.

—Selected.

◆ ◆ ◆

Got the Bug All Right.

A Chinaman recently made his appearance at a drug store in Charlestown, Massachusetts, and presented a prescription for some bug killing powder. When he was given the powder the clerk was particularly careful to tell him that it was the deadliest of poisons, and that he must be careful in using it, or leaving it around. The clerk was somewhat surprised a few hours later to see his customer returning supported by another Chinaman and evidently very sick. Guessing that his directions had not been followed out he prepared an antidote, and by hard work revived the sufferer.

The explanation of the disobedience was given with the stoical, convincing manner of the East.

"Me slallow blug. No likee him. Lun alound inside. Takee plowder so killed blug. Make um slick."—Selected.

◆ ◆ ◆

Secrets of Diplomacy.

By "the secrets of diplomacy," a form of words much used and misused of late, a contemporary is reminded of the sharp-eyed little girl who was excluded from a "club" of children somewhat larger. a club which proudly claimed to have a "secret." One day she rushed in to her mother breathlessly. "O mother," she cried, "I know what a secret is! I know!" "Well, what is it?" "It's a bug tied up in a rag." The real secrets of diplomacy are so well tied up that reporters can not guess whether they are bugs or butterflies.—Selected.

◆ ◆ ◆

Prospering.

Good morning, sisters and brothers! Rap-tap-tap! "Sister Inner Guard, will you please admit us? We have the correct pass-word; we wish to inform the sisters and brothers that care to know how nicely we are thriving. We are young, but my! how we do grow. By the time that this is in print we will be three months old. "Mere babes," we hear some of you whisper. But we are not in swaddling clothes. We have already laid them aside; we have grown too large for them long ago.

Since our organization, July 2nd, we have admitted by initiation five and one by card, and expect several applications at our next meeting.

By the way, our treasury is growing some, too. On July 25th we gave an ice-cream social. We only had eight members then, and we cleared eleven dollars and sixty cents. Now, we are selling tickets for our first ball, which will be held the 18th of September. We feel sure of success.

The Brothers of 233 will stand by us. They have stood loyally by us at all times and in all that we undertake.

On the evening of September 5th we held a joint meeting. Although it was not largely attended, it was a very enjoyable affair. Games and good-natured jokes were the special features of the evening's enjoyment after the regular order of business was gone through. And last but not least was the delicious refreshments, which were served in abundance by the ladies. Every one departed with the wish that we would have another joint meeting in the near future.

For fear of the waste basket, we had better withdraw. With best wishes for our beloved Magazine and the noble Brotherhood, and also our own noble Order, we are ever yours in "Friendship and Charity." A FIREMAN'S WIFE.

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One of Montana's First.

As the months roll by, and the time for the Magazine comes to hand, if, after looking it over, expecting to see a letter from your home lodge, you do not find one, don't be disappointed. Naturally you depend on your Secretary to write these letters for you (if you have not appointed a Magazine Correspondent). Dear sister, it is not your Secretary that is to blame for the nonappearance of the letter in the Magazine; it is you yourself that is to blame. Stop and think when you last wrote to the Editress (can you recall the date), or have you forgotten it? We are starting in a new year. Sisters, try and do better in all respects. It is with pleasure that we read the announcement in the August issue of the Magazine of a new sister lodge near by. Welcome, sisters of Spokane No. 195. Though we are located in different States, yet we are not far apart in miles.

Our meetings of late have not been well attended, due to the extremely warm weather, and the absence of several of our officers who are taking a vacation, visiting the Lewis and Clark Exposition. Since our last letter we have had our usual good times, such as socials, union meetings, and even had amateur theatricals, such as "The Old Maid's Convention," and the "Belles of Blackville," which was played under the auspices of the L. S. to the B. of L. F. Some of our brothers have already intimated that they would not have to work so hard any more, as their wives had become actresses.

We sincerely miss our Brother Shunk and Brother and Sister Roman. They have moved from the city. They were familiar with the camera, and many a good time we associate with them by the pictures taken. We almost envy the sisters in the east for their State meetings and their frequent visits of Grand Lodge officers. We trust that the time is not far away when we can boast of a State meeting. I think with the sister that wrote for the July issue of the Magazine, No. 147, that if the brothers would encourage their families more, they would feel more encouraged to make a start and become members of our Order, and once a start is made—you know a woman won't give up until she succeeds in what she undertakes if it is possible for her to do so.

Well, dear sisters, if we can not have State meetings we can have union meetings at home. The brothers that attend lodge in cities where there is no Ladies Society don't know what good times they are missing. What they want is to be visiting at a sister lodge and be invited to attend a union meeting. They would go home with a firm resolve to stir them up and have a lodge organized at once.

Now, brothers, it does seem that a State that can boast of ten B. of L. F. lodges ought to have at least one-half as many auxiliaries to them. Perhaps the newly installed officers will take hold and do a little rustling for us.

Just a word for our new officers. Give them your hearty support, and if new members are holding office, give them the benefit of your past experience as an officer and lend them a helping hand, especially the Collector and Treasurer. Their paths are not strewn with roses. And your Worthy President needs your hearty support and co-operation in everything she may undertake. Give your assistance willingly and with a cheerful heart, and I am sure that your lodge will prosper if all work together in harmony and good will.

Wishing success to all of our Grand Lodge officers, and particularly our Editress, I remain yours in Friendship and Charity.

A MEMBER OF MONTANA'S FIRST.

Leave Them Outside.

Don't bring them into the lodge room.
Anger and spite and pride.
Drop at the gate of the temple
The strife of the world outside;
Forget all your cares and trials,
Forget every selfish sorrow,
And remember the cause you met for,
And haste ye the glad tomorrow.

Drop at the gate of the temple
Envy and spite and gloom.
Don't bring personal quarrels
And discord into the room:
Forget the slights of a sister,
Forget the wrongs of a brother,
And remember the new commandment
That ye all love one another.

Bring your heart into the lodge room,
But leave yourself outside—
That is, your personal feelings.
Ambition, vanity, pride.
Center each thought and power
On the cause for which you assemble.

Then don't bring into the lodge room
Envy or strife or pride,
Or aught that will mar our union,
But leave them all outside.
—Exchange.

* * *

What Friendship Means.

Ella Wheeler Wilcox, in the Chicago American, says of friendship:

"Friendship is a word often and lightly used, and few of us realize just what is meant by the term, 'a loyal friend.'

"To stand by a friend 'through good and ill' is supposed to be one of the requisite qualities of loyal friendship.

"Yet the man who stands by his friend to the extent of justifying his evil deeds is not his friend, but his worst enemy.

"You may attend your friend through his trial before judge and jury, and use all the influence you possess to save him from punishment of the law, believing that he will not repeat his error, but if you justify his conduct and uphold him in a defiance of law and order, that is not friendship.

"Only when you inspire your friend to live up to the best within himself are you the real friend.

"'I would stand by you under all conditions' is not so noble a sentiment as to say: 'I would always love you under all conditions, but I could not stand by you when I knew you were doing what was unworthy of you.'

"Friendship takes us to the brink with a reckless friend, but it is only weakness and folly which take us over the brink. We serve no purpose, divine or human, by such an act. It is better that the friend repents and wants to try again, than that we should go down in the dark waters with him.

"Friendship demands that we should treat our friend's friend with courtesy and kindness, but it does not make it always possible to enjoy his society. It does not even save us from the possibility of being inexpressibly bored by the very association which may be delightful to our friend.

"On the other hand, the uncongenial acquaintness of our friend may prove a charming companion to us in many ways. Because our friend does not enjoy him is no cause why we should drop him from our list.

"Tyranny demands such proofs of obedience: friendship never.

"The man who has been guilty of absolute cruelty, disloyalty or meanness toward our friend can never sit at our board or share our hospitality, no matter how charming be his demeanor to us, if we would be worthy the name of absolute friend. We are not called upon to cater to our friend's dislikes, but we are called upon to feel his injuries.

"Friendship does not mean that we must see no flaws or mention no faults. It does not mean that we should praise whatever our friend may do, good, bad or indifferent. It calls for careful and kind criticism and analysis.

"Yet if his standards differ from your own and he holds to them and does not abandon them for yours, it is no evidence that he is not appreciative of your interest. For each soul must follow its own light, and not that lent by another, however unselfish and devoted that other may be.

"Friendship does not necessitate the same point of view on all subjects.

"It necessitates the same sense of honor, the same adherence to principle, but individual opinions, views and ideas add to the interest of friendship.

"Devoid of the sense element of love, jealousy is impossible, and if the dwarf twin of jealousy, envy, approaches, it must shrink and die under the clear light of a friend's gaze.

"Friendship does not mean bearing another's burden; it means giving a friend the courage and strength to bear his own cheerfully. It means helping him over the rough places, but it does not mean walking and carrying him."

What Might Have Been.

My thoughts go back this beautiful morning,
As the sun in its glory the world is adorning;
And I wonder and think as I sit within
If mother had lived "What might have been."

She is needed so many times a day,
But time wears on in a kind-of-a-way
Until father is taken, by Death's cruel wind,
And again we are wondering, "What might have been."

There are two of us left, sister and I,
The rest, one by one, have gone up on high;
But God made the world, and He takes kin from kin,
And leaves us to wonder "What might have been."

Think, on, poor soul, it is high time for thought,
But what has passed can not be bought:
Keep on with your dreaming in your infant way.
And perhaps all things will be righted some day.

Brun.

The above poem was written by a member of 127.

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Letters from Friends.

From L. S. 7—*(Mrs. Mattie Davis, Palestine, Texas.)* Holy City Lodge wishes to tell the sisters, through the columns of the Magazine, that our society, though small, is progressing nicely. We have had the pleasure of initiating three candidates lately, and look forward to more in the near future. Our auxiliary has proven to be a source of great enjoyment to all, and we are always glad to welcome new sisters into our happy circle.

Monday night, August 28th, we held a joint meeting with the brothers of 156. The boys seemed very much pleased, and are anxious to have us meet with them again. This we will do as often as we can. We are proud of our brothers in 156. There are none finer in the Brotherhood.

We served ice cream and cake, and had a splendid time generally.

As this is my first attempt at writing for the Magazine, and if this does not find the waste paper basket, I will write again.

Wishing success to all sister lodges, and good luck and prosperity to the boys of 156.

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From L. S. 86—*(Josephine Candler, Laramie, Wyoming.)* I am going to write a few lines for our Magazine and let the sister lodges know that we are still alive and prospering. We have a flourishing lodge, a lovely place to meet, and prospects of many new members. We have a candidate ready to initiate at our next meeting, and hope to keep the "goat" busy in the near future.

We are rejoicing with Sister Minnie McAllister over the dear little baby girl that came to her a few weeks ago.

We grieve with Brother and Sister Bowman in the death of their little son, and extend our heartfelt sympathy to them.

We will write often for the Magazine and let the sister lodges know how well we are getting along. Success to the Ladies Society.

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From L. S. 202—*("Emi-cic," Washington, D. C.)* On the 19th of September, 1905, fourteen ladies, composed of the wives, mothers and sisters of locomotive firemen, met in Weller's Hall, and organized Mount Vernon Lodge, No. 202, Ladies Society to the Brotherhood of Locomotive Firemen. I think the name of this new society very appropriate, as the lodge is in Washington, D. C., which is situated on the Potomac, and only a few miles from Mount Vernon, the resting place of the illustrious George Washington.

We elected Mrs. Smith, President; Mrs. Brown, Vice-President, and in lieu of a "Mrs. Jones," as we have no one by that name, we elected Mrs. Borland, Past President, and from the interest she takes I think we shall find that she makes a very efficient officer.

As the time passed so rapidly we could not attend to every detail, Sister Smith invited us to meet at her home, which we did, and spent a most pleasant evening. There were fourteen sisters present. See what a good attendance!

Sister Maggie Smith, who had spoken several times, was told by her sister to stop "butting in," which created quite a laugh. When told by Sister Sargent that she had been appointed to an office and would have in charge the "goat," she turned to her sister and said, "I surely will come butting in now."

When business was over, Brother Smith told his wife she was wanted in the dining-room. In a few minutes she returned and invited us all down to a delightful spread of ice cream, cake and fruit, and as the evening was extremely warm, it made the refreshments all the more enjoyable.

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FROM L. S. 7—*(Mrs. Dessie Anderson, Holy City, L. S., Palestine, Texas.)* It is again high time that our sisters should again hear from No. 7. We are getting along nicely and doing some good work. Some of our sisters are a little slow in attendance at meetings, but we hope that they will soon become more regular in their attendance. Now, sisters, come out to meeting, get interested in the work of your society, and I can assure you that you will enjoy every session.

We are glad to see Brother Woods out again, after having been laid up so long with a crippled foot.

The hall in which our society holds its meetings caught fire and we had the misfortune to have our desk and charter badly burned. The brothers of Neches, No. 156, very kindly sent in and secured for us a new charter and have our desk under repair. We thank the brothers for their kindness to us. We always find in them willing hands, ready at every opportunity to assist the Ladies Society.

The L. S. and the B. of L. F. have enjoyed several joint meetings since we last wrote for the Magazine. Each meeting the ladies served, and the meetings were very pleasant and sociable.

Sisters, let me exhort you to do your part in making our society interesting and profitable to all members. The success of a society rests with its members. Let us work together in peace and harmony, ever keeping in mind our beautiful motto, "Friendship and Charity."

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FROM L. S. 36—*(Zena Hartman, Sec. Sayre, Pa.)* As it has been some time since you have heard from Autumn Leaf No. 36, Sayre, Pa., and as we are still in good running order, we take this opportunity to tell you of it. At our next meeting, October 12th, we will have in connection therewith our regular joint meeting with the brothers, and I think by the menu that the ladies have been preparing that no one will go away hungry. We do hope that Brothers Walsh and Falsey will be there, so that they can wash the dishes.

Our society has been again saddened by the death of Mrs. Mary Crans, who died Sept. 27, 1905, at her home in Waverly, N. Y., after an illness of two months of Bright's disease. Only those who have had to say good-bye to their loved ones know how sad a word it is. Sad and hard for the one who goes, but far sadder still for the ones who are left behind. Sister Crans is not only mourned by our society, but by a large circle of friends. Sister Crans was a nurse by profession and could not meet with us often, but, whenever present, she always took an active part, and lodge was never complete without she sang for us a few selections.

Our society extends our deepest sympathy to the beloved son and daughter in this sad affliction.

◆ ◆ ◆

Home.

Precious the home, though but a rifted rock
Where way-worn shepherd tarries with his flock;
Precious the friendly covert, though it be
Only the shelter of a lonely tree.
Dear is that world-old, warm, heart-pulling thing,
To man and beast and bird one gladdening;
Dear is the roof, the hole, the lair, the nest—
Hid places where the heart can be at rest.

But home will greaten as the years go by,
Probing the soul and lifting the low sky;
When Beauty shall step downward from her star
To smile away the blemish and the scar;
When Science shall draw down Orion's band
To ease the burden of the Woman's hand,
And all the Powers of Earth and Air and Fire
Shall be the lackeys of the heart's desire.

And home will sweeten in the coming days,
When widening love shall warm these human ways;
When every mother pressing to her face
Her child, shall clasp all children of the race.
Then will the rafter and the oaken beam
Be laid in music and the poet's dream—
Then Earth, as far as flies the feather foam,
Shall have in it the friendly feel of Home.

—Edwin Markham, in Twentieth Century Home.

Quarterly Insurance Assessment.

(Second Series Numbers.)

Notice No. 12, for the Quarter Ending December 30, 1905.

GRAND LODGE
LADIES SOCIETY OF THE BROTHERHOOD OF LOCOMOTIVE FIREMEN.

Office of the
GRAND SECRETARY AND TREASURER.

BOONE, IOWA, Dec. 1, 1905.

To All Treasurers of Subordinate Lodges:

Sisters—Assessment No. 12 for the quarter ending Dec. 30, 1905, is hereby levied upon all members holding membership in the Insurance Department of the Society on or before Dec. 1, 1905. You will forward to this office so as to reach here on or before the 10th day of December, 1905, the sum of sixty (60) cents from each member carrying a $200 policy and one dollar and twenty ($1.20) cents from each member carrying a $400 policy, using the two printed blanks which accompany this notice.

All remittances to be made by draft, postoffice or express money order, payable to "Grand Secretary and Treasurer, Ladies Society, B. of L. F."

Members initiated on and after Dec. 1, 1905, will not be liable for this assessment.

MARY E. DU BOIS,
Grand Secretary and Treasurer.

GEORGIE M. SARGENT,
Grand President.

NOTE.—We enclose *two printed* blanks upon which Treasurers will make returns to the Grand Lodge for the above assessments. Both statements will be filled out *exactly* alike and sent with returns. If all names do not appear in the printed list, they will be added. If any corrections are necessary they can be made by the Treasurer. One of the printed statements, with receipt, will be returned to the Treasurer.

For the names, lodge number, cause of death, etc., of deceased sisters in the payment of whose claim this assessment is levied, see issue of The Brotherhood of Locomotive Firemen's Magazine, where detailed statement of the same will be given in department devoted to the Society.

* * *

"Sometime."

Sometime—ah, be it far away,
We must say goodby;
And one shall cold and silent lie,
Grief mute, the other stay.

Like meshes of a worn-out glove
Must sometimes rend apart—
Why whisper thus, foreboding heart?
The strong links of our love.

In dreary day or darksome night,
Deaf to heart-breaking sighs
And blind to anguished eyes,
One soul shall take its flight.

Sometime such shall be our sure fate
And yet a whisper saith;
"Still shall ye," conquering Death,
Each for the other wait."

—W. Struthers in Boston Transcript.

* * *

Death Report.

Maggie Scott.—Lodge 142; died September 16, 1905; cause, chronic constipation. Insurance, $200.

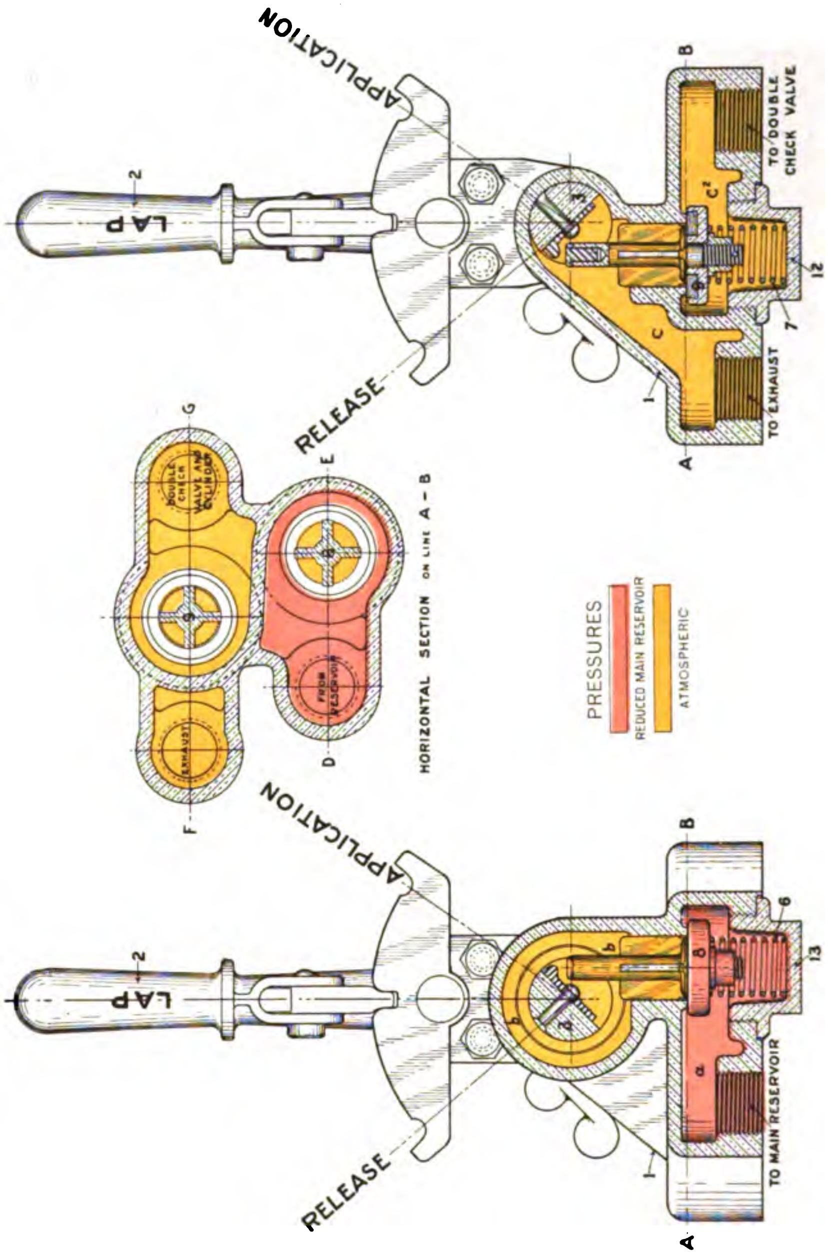
Ella Goldsworthy.—Lodge 10; died September 23, 1905; cause, tuberculosis. Insurance, $200.

Mary Crans.—Lodge 36; died September 27, 1905; cause, Bright's disease, Insurance, $200.

NOTICE.—Many applications for insurance have accumulated in the office of the Grand Secretary and Treasurer, waiting report of admission. Secretaries will please make reports and promptly receive insurance certificates.

MARY E. DU BOIS,
G. S. and T.

* * *



Locomotive Firemen's Magazine Educational Charts

WESTINGHOUSE AIR BRAKE SERIES

PLATE XXIV—STRAIGHT AIR BRAKE VALVE

(Lap Position)

BROTHERHOOD OF
Locomotive Firemen's Magazine
TECHNICAL DEPARTMENT
JOHN F. McNAMEE
SUBSCRIPTION PRICE $1.50 PER YEAR

Entered December 4, 1902, at Indianapolis, Ind., as Second-class Matter, under act of Congress of March 3, 1879

VOL. 39 NO. 6 INDIANAPOLIS, IND. DECEMBER 1905

Plate XXIV—Straight Air Brake Valve (Lap Position).

Plate XXIV of the Westinghouse Air Brake Series of the Locomotive Firemen's Magazine Educational Charts shows views of the straight-air brake valve in lap position.

As explained in connection with Plate XXIII, valve shaft *3* is cut away on opposite sides, and at two points, in which tappet pieces are riveted. It will be seen by reference to Plate XXIV that the flanges on these tappet pieces stand directly over and above the steel caps on the ends of check valve stems *8* and *9*. When the brake valve is in lap position both check valves *8* and *9* are seated.

The left-hand view on Plate XXIV shows a section through chambers *a* and *b* and the check valve *8*, cut on the line *D-E* of the upper or middle view, while the right-hand view shows a section through chambers *c* and c^2 and the check valve *9*, cut on the line *F-G* of the upper view. The upper or middle view is a horizontal section cut on the line *A-B* of both the left and right-hand views, and shows the locations of check valves *8* and *9* in the brake-valve body, as well as the connections to main reservoir, double check valve and brake cylinder, and the exhaust.

By referring to the left-hand view, Plate XXIV, it will be seen that reduced main reservoir pressure has entered chamber *a* and is assisting check-valve spring *6* to hold check valve *8* to its seat. Moving the brake-valve handle *2* to the right (application position) causes valve shaft *3* to rotate, also to the right, whereupon the tappet piece comes in contact with the steel cap on the stem of check valve *8*, forcing check valve *8* downward against the resistance of check-valve spring *6* and the reduced main reservoir pressure, and permitting this pressure to pass from chamber *a*, up and around check valve *8* into chamber *b*, thence through passage *c*, c^1 and c^2 (Plate XXIII) and out the connection to the double check valve and brake cylinder, applying the brakes. In moving the brake-valve handle *2* to the right (application position), the tappet piece above the stem of the check valve *9* has been carried farther away, that is, to the right of the check-valve stem, and check-valve *9* has not moved from its seat.

To release the brake, the brake-valve handle *2* is moved to the left (release position). In this movement of the brake-valve handle, check valve *8* has seated, cutting off communication with reduced main reservoir pressure, the tappet piece above the stem of check valve *9* has caused that valve to unseat, and brake cylinder pressure now escapes through chamber c^2, up and around check valve *9* into chamber *c*, and out the exhaust opening to the atmosphere.

The Third Man on the Modern Locomotive.*

To the Officers and Members of the Traveling Engineers' Association:

Gentlemen—The following is offered on the subject assigned to your committee. "Is the third man necessary on the modern locomotive? If so, in what capacity?"

After giving this subject much thought we are of the opinion that neither the men nor the company would be benefited, on the whole, by having the third man. We are all aware that two engineers on one engine would be equal to none, and a second fireman is not needed.

A few years ago a fireman was required to clean his own fires, hoe out the ashpan, spark the front end, and when he arrived at the terminal his labors had just began, for he had the engine to clean inside and out, also brass to scour: while at the present time he has been relieved of the cleaning almost entirely, and with the modern locomotive he has been relieved of the duty of cleaning fires, ashpans and sparking front ends.

The modern locomotive has not sufficient room in the cab for the third man. The engineer's seat is only provided for one man to sit on; the head brakeman is entitled to a seat, also the fireman. If we had the second fireman, where would he find a place to rest? When he had his trick off he would get as tired standing up and trying to get out of the fireman's way as he would to fire the engine, and on a long division we would have two men tired out instead of one by having the second fireman.

There would be more trouble between the engineers and firemen, as in case of any differences there would be two against one, and as it would be necessary to give the engineer charge over both the firemen, there would be a chance for argument and disagreement, which would be detrimental to the service, as well as the men.

The hardship of a fireman at the present day, in our opinion, is not what it is pictured. He has very little to do except to put coal into the firebox.

The second fireman would also make promotion much slower than at present, as a man would be in the service one-third longer before he would get his promotion. This would be detrimental to the service, as the class of men desired for engineers would not accept the position, which would lower the standard instead of raising it.

If our divisions are too long, making it impossible for one man to cover the division, cut the division in two and have a fresh man on the engine.

In correspondence with a road that tried the experiment of placing the third man on an engine, it was given as their experience that the method was not at all satisfactory. Friction developed right from the start, and, taken as a whole, not much if any better results were obtained than with one fireman. The best results have been obtained by making shorter divisions for men firing the heaviest locomotives.

We are not in favor of the third man on the engine in any capacity. "Two is a company, three is a crowd."

Committee.—W. J. Crandall, Chairman: I. L. Beebe, W. M. Boughton, W. S. Brazier, E. E. Bishop.

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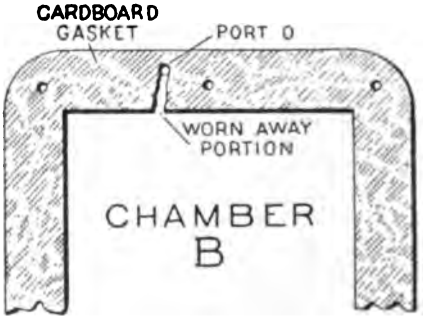
Answer to a Question on the New York Brake Valve.

In the July, 1905, issue of the Magazine was published "A Question on the New York Brake Valve," which was submitted by one of our members with the request that the answer to same be withheld until a future issue to demonstrate the ability of firemen to give the correct answer. So far but one answer has been received, which is published elsewhere. The answer as originally submitted with the question is as follows:



Showing how gasket was worn away between Port O and Chamber B

The cardboard gasket between cover *E V 115 A* and valve body *E V 101 A* (see sketch) was cut or broken at port *O*, back end of valve body, so that main reservoir pressure leaked from chamber

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*Report of committee presented before the convention of the Traveling Engineers' Association, at Detroit, Mich., September 12-15, 1905.

B over into port *O* and, consequently, into the supplementary reservoir, causing piston *E V 104 A* to move forward very quickly, thereby moving cut-off valve *E V 110 A* back nearly as fast as slide valve *E V 114 A* was pulled back by handle *E V 123*. Consequently only about 6 to 8 pounds of air could escape to the atmosphere.

The reason why the equalizing piston *E V 104 A* did not move forward before the handle was placed in a service notch is because when the handle *E V 123* is in full release or running position the piston *E V 104 A* is at the back end of the valve body and vent valve *E V 180* has port *O* blocked. The surface on vent valve *E V 180* exposed to main reservoir pressure being so much smaller than the surface of piston *E V 104 A* exposed to train-line pressure, the reservoir pressure—although 20 pounds greater to the square inch (in running position) than the train-line pressure — could not exert enough force to move piston *E V 104 A* until a reduction in train-line pressure was made. Then piston *E V 104 A* would naturally move forward and, the pressure being so much greater behind than in front of the piston, it moved very rapidly, causing the defect mentioned.

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*Essential Qualities of a Successful Locomotive Engineer.**

Three qualities are most essential for an engineer to possess in order to make a success of running an engine: First, a fairly good education; second, a reasonable amount of practical experience as a fireman, three years at least; and third, good judgment.

Probably the third is the most necessary of the three, as many men who have had the education and the experience have failed to make a success of running because they lacked good judgment. A fireman frequently has chances of measuring his capacity along this line, by watching the outcome of things which his engineer does, and which at the moment he thinks is wrong or unnecessary. The engineer applies his brake some distance from a fixed signal, or before rounding a curve, or when entering a yard when everything is apparently clear. If he watches the case to the end, he will likely find that the engineer's past experience has taught him the signal is liable to be changed at the last moment; find someone's tail end just around the curve, or a yard engine working down in the yard which may run out in front of him at any moment. The man with good judgment realizes how many of our wrecks are caused by the failure of yard engines and others to be in the clear, or by tail ends not protected, and he takes precaution accordingly. Frequently men take long chances in order to make the time, but generally the man who does sooner or later gets caught. Again, good judgment is required in case of a breakdown. A man must think quickly whether the engine can be readily repaired and take in the train, or whether another engine must be sent for, also what must be disconnected or can be left as it is, until the engine is off the main line into a siding.

Education is necessary principally in studying the engine, as it assists the man in understanding what he reads, and again in the intelligent booking of repairs to the engine. One has only to look at the work book in the majority of roundhouses to see how much this quality is needed. Much depends on the proper booking of the work, whether it is done or not.

The habit of studying has to be acquired. A man may read a book from cover to cover and yet not study it. Study consists of taking the articles one by one, or a paragraph at a time, and not leaving until its substance is mastered. Many men, when they discover a word with which they are not familiar, skip it, trusting to get the sense later on, instead of looking up its meaning. By ignoring it they lose the sense of the whole article.

In studying the locomotive or its appliances, take one part at a time and thoroughly master it before going further. Don't start in with the air-brake but rather begin by learning all about fuel and fuel economy, also draft appliances and boiler construction. These learned, take injectors and lubricators, then spring gear and valve motion. After these subjects have been learned, "breakdowns" will come easily, for to learn what is necessary to do is simply to have mastered the construction of the engine.

Many of the big roads have adopted the progressive form of examinations which require a man to pass certain examinations at the end of each year for the first three years he fires. At the end of the first year he is examined on combustion and draft appliances, and on signals and rules; in the second year on the engine and engine management; the third year, on breakdowns and air-brake. These roads, unquestionably, have the best posted men in the country. Other roads, noting the success of the progressive examinations, are forming plans to adopt it.

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*By W. J. Hill, in the New York, New Haven & Hartford Railroad News.

Some say they can not learn anything out of books, and they honestly believe it. They are entitled to a great deal of sympathy, for they are badly handicapped, inasmuch as they have to obtain by experience what other men have already learned and printed to assist their fellows out of the same difficulties. These men, however, by persevering, could acquire habits of study, for the whole world has been educated from books.

Read books on mechanical or scientific subjects, and no matter how poor they may be, something instructive will be found therein, and the reading of them will at least familiarize you with the English language, and therefore make you more competent to understand others. Acquire habits of study, and instead of regretting that you did not get a good education when you were young, embrace some of the opportunities which every man has today, through correspondence schools, night schools, or other technical schools. In the country today there are many men, fifty years of age, who are being educated in this way. Start at once, so that five years from now, when you feel just as young as you do today, you will not still be regretting that you did not enlist in 1905. Get busy, and remember you are never too old to learn if you persevere.

It is often said that you can not make an engineer out of books, and any man who has ever run an engine believes it. This is undoubtedly true, for it will always be necessary for a man to get his first or practical experience on the deck of an engine, before he is capable of taking charge of her. When an engineer starts out with a train today he becomes master mechanic of that train and is expected to successfully bring it to its destination. Many things are liable to happen to his engine and he is supposed to have sufficient knowledge of the engine to locate the trouble, and enough inventive genius about him to work out a plan for repairing the breakdown, so that if he can not bring the train in, he can, at least, bring in his engine under her own steam.

It is not the engineer who makes a successful trip with a good engine, good coal and weather conditions in his favor who displays his ability as an engineer. Any kind of an engineman could do that, but it is the man who can go out on the road and successfully take a train from terminal to terminal with a leaky engine, poor coal and other adverse conditions which are common today, who shows that he is an engineer "of the first water" and entitled to his company's confidence.

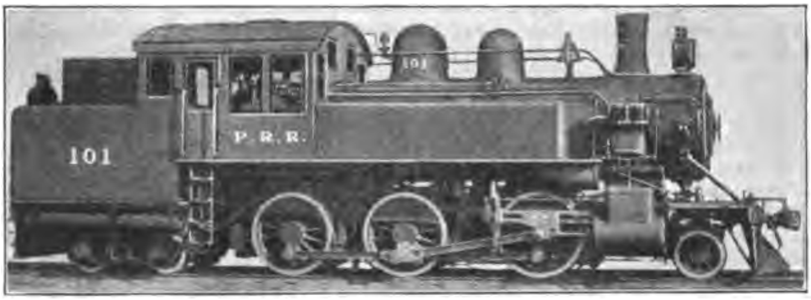
Many men continually find fault with the conditions under which they have to work, such as poor steaming engines, poor coal, etc., and cite these conditions as evidence that the company does not take any interest in the men, so why should they study? It is reasonably certain that the well posted man will make a better success of working under these conditions than his kicking brother who will not study, as he has been trained to think, and consequently will look farther ahead and meet emergencies.

Some time ago a magazine sent letters to a number of high railway officials asking them if they gave preference to college graduates in filling vacancies in the various departments. Nearly all the men thus written to replied that they preferred men who had at least a thorough public school training, or better still, a technical education, owing to the fact that these men had been trained to study; their minds were more active, thus being better fitted for an emergency.

When talking against theory we should remember that the man who is all theory, or the one who is all practice, is like a man with one leg. He can get along in a kind of a way, but he needs the two of them to be successful. The locomotive or any machine is designed and put on paper in the form of a blue print by the theoretical man who possibly could not fit a main-rod brass to save his life. Then the practical man, who probably could not make a blue print, takes the drawings and builds the engine. But don't forget, it is the theoretical man who gets the credit for the machine and also the big pay.

Opportunities for technical men with practical experience are plentiful today as before, if not more so, and there are hundreds of men working their way up from the ranks to the highest positions in their respective departments as a result of technical education obtained in their spare moments.

The N. Y., N. H. & H. R. R., like other roads, is aware of the necessity of this technical training. A car has been fitted up and placed at the disposal of the International Correspondence Schools of Scranton, Pa., who keep an instructor in the car to deliver lectures on the locomotive and its appliances. These lectures are given each week-day, at 10 a. m., 2 p. m. and 7:30 p. m., open to all employes. The lectures are illustrated by colored slides in a stereopticon, throwing the view on a canvas placed in one end of the car, and make the subject lectured on very clear. Instruction is also carried on in fuel economy and draft appliances, and students of the school also receive assistance with their lessons. At the lectures no distinction is made between students and non-students of the school; all are welcomed.



LOCOMOTIVE FOR THE PANAMA RAILROAD

Locomotive for the Panama Railroad.

The illustration herewith is of one of 24 locomotives of the 2-6-4 type which are being built by the American Locomotive Company for the Panama Railroad. These locomotives are built to a gauge of 5 feet, and are intended for use in steam shovel work on the main line. They are provided with rear and side tanks with a capacity of 3,700 gallons of water and five tons of fuel. The cylinders are 19x26 inches; driving wheels 54 inches in diameter; engine truck wheels 30 inches in diameter; and trailing truck wheels 28 inches in diameter. The valves are of the simple slide valve type, and the boiler pressure is 180 pounds. The total weight of these engines in working order is 183,500 pounds, of which 124.000 pounds is carried on the drivers. They are provided with headlights and pilots in both front and rear, and may be run in either direction with equal facility. It is stated that this order will be followed by one for 120 locomotives of the 2-6-0 type.

* * *

Deadening Noise on the Chicago Elevated Loop.

By an arrangement with the city council, the Northwestern Elevated Railroad, of Chicago, is conducting experiments with a view to finding a means of deadening the noise of trains on the elevated railways. This action is in response to a general public feeling that seems to demand a lessening of the noise on the Union Elevated loop. The experiments at present will be confined to that part of the loop structure on Wabash Avenue between Monroe Street and Jackson Boulevard. The chief interest of the experiments lies in the extreme simplicity of the means proposed. Neither the rails, ties nor fastenings are disturbed. The space between the ties is closed at the bottom by a plank fitted into the opening. Over the ends of the ties, another plank is spiked, which makes connection at the top with the outside wooden guard rail. The result is the complete closing of all interstices around the ties and for a height somewhat above the top of the rail. This bed is then filled with gravel laid level and extending in depth up to the head of the rail, so that the web and base of the rail are entirely bedded in gravel. It is expected that this simple method will result in an effectual absorption by the gravel of the vibration from the rail. The scheme is expected to prove more effectual than bedding parts of the deck in concrete, on account of using a more elastic medium, and it is considerably less expensive than any of the methods heretofore proposed. Some disadvantages are expected to arise, such as the dripping of moisture from the gravel, and more especially in connection with heavy snows. These considerations have prompted a modification of the scheme, which will be tried. This will consist in filling only the space between the rails and the outside wooden guard rail, leaving the center of the track open as before. Even this simple means is expected to show decided benefits. About thirty days will elapse before the experiment will have reached a stage to warrant any positive conclusions or further definite action.—The Railway and Engineering Review.

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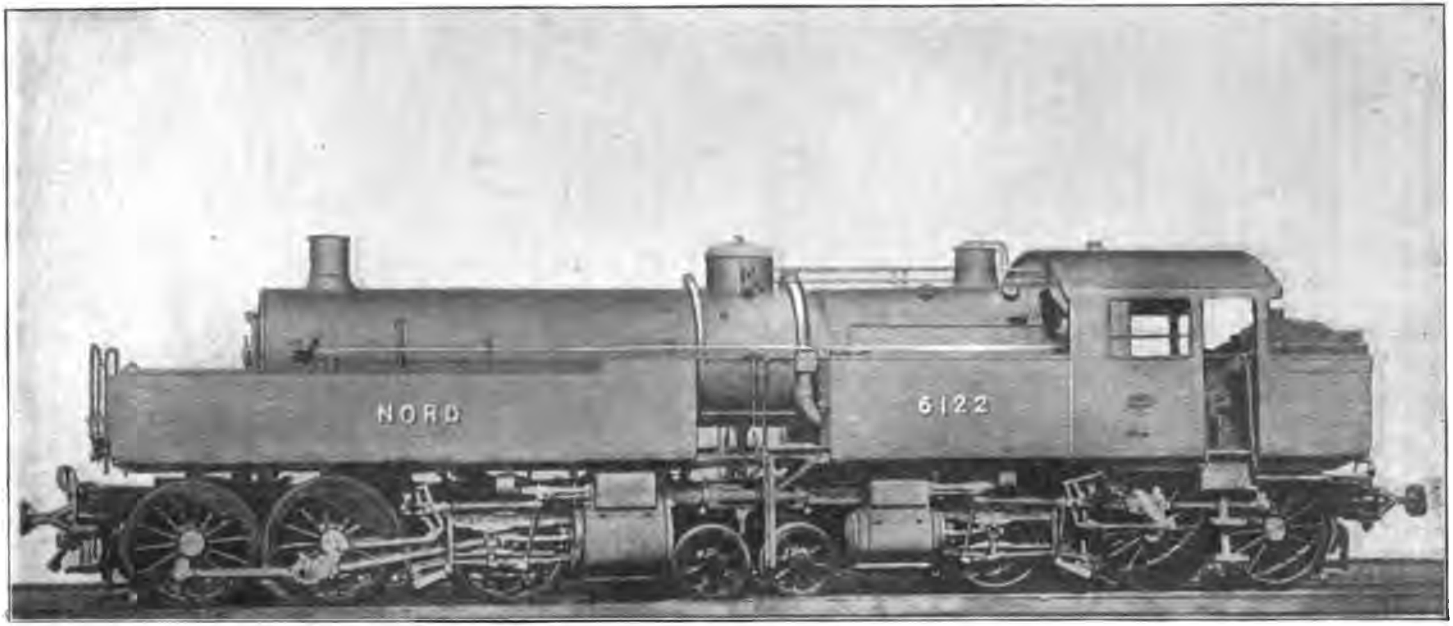
French 6-2-2-6 Compound Freight Locomotive.

The Nord Railway of France has a very large passenger traffic out of Paris, bound to and from London, as well as to the Belgian frontier, and in addition is regularly called upon to handle a very extensive coal traffic from the Lens district and the northeast of France generally. For this coal traffic, a number of powerful six-wheeled coupled compound locomotives have, within the last few years, been introduced on the Nord Railway, but although these machines have been capable of hauling about 1,060 tons, on the section of railway between Lens and Paris-La Chapelle, at a speed of over 20 miles per hour, they have not been found altogether suitable for taking the heaviest loaded freight trains over the stretch of track from Hirson to Valenciennes and Busigny, where the gradients encountered are somewhat unfavorable. As a result the heaviest of the coal trains from the Lens basin have, upon arrival at Valenciennes and Busigny, had to be split up and additional locomotive power requisitioned from these points. With a view to reducing the cost of this locomotive power and to operate the coal traffic with increasing economy, Mons. du Bousquet, the chief mechanical engineer of the Nord of France Railway, has quite recently designed an entirely new type of locomotive, one of which is now being exhibited at the Liege Exposition, whilst the other engine has been put to actual work in hauling heavy coal trains, and is, by the courtesy of Mons. du Bousquet, illustrated in the accompanying illustrations. As will be noticed the two sets of wheels of the locomotive are independent of each other, and, in addition to six coupled driving wheels, each has a pair of carrying wheels in front of the cylinders. The driving wheels are each 57¼ inches in diameter and the carrying wheels 33½ inches in diameter. The locomotive is of the four-cylinder compound type—the highest pressure cylinders, being 15¾ inches in diameter with a 26¾-inch stroke, drive the rear set of wheels, whilst the low-pressure cylinders, which are 24¾ inches diameter, with a piston stroke of 26¾ inches, actuate the six coupled wheels of the front set. Both of the running gear pivots are joined by a central built-up girder, or main under-frame, which also carries the boiler, side tanks and other appendages. Where a large tractive force is desired, each pair of cylinders can receive live steam, thereby increasing the theoretical force from 18½ tons to 24 tons.

The steam passes from the boiler to a rotatable joint at the rear of the firebox —below the fire door and above the pivot of the rear set of wheels. From this rotary joint, a separate steam pipe supplies steam to each of the high-pressure cylinders, a special system of knee-jointed pipes connecting the high-pressure cylinders with the low-pressure cylinders, whilst the utilization of the new type of intercepting and starting valve recently brought out on the Nord of France Railway permits of the starting of the two groups of engines as simple expansion engines. The ends of the two cross beams are provided with slides bearing on castings attached to the rear running gear frames, and by this means the rear set of wheels can turn in a horizontal plane around its pivot, but can not move in any other direction, as can the front set, which have a spherical pivot. Buffer springs are provided with a view to minimizing the transverse oscillations and the front set can thus adapt itself to the inequalities of the road, without in any degree affecting the suspended mass resting on the central girder. In order that the front wheels may be sufficiently loaded, a portion of the water tanks is arranged on this end, this tank having a carrying capacity of 1,980 gallons, sufficient space having been allowed between the boiler and tanks to permit of the angular movement of the front wheels and frame. The remainder of the water tanks are located on either side of the firebox, and there is accommodation here for 836 gallons.

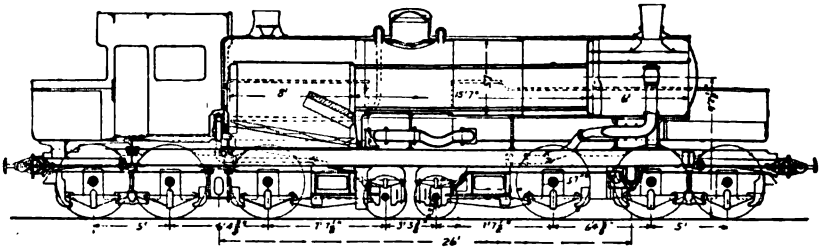
The boiler is of somewhat unusual di-



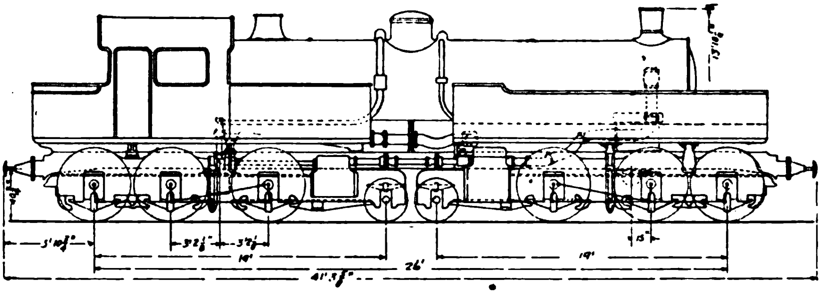
FRENCH COMPOUND DUPLEX LOCOMOTIVE, NORD RAILWAY

(From The Railway and Engineering Review) mensions, its barrel having a length of 15 feet 10¼ inches and a diameter of 4 feet 9¼ inches, whilst its center line is 9 feet 2¼ inches above rail level. The high-pressure and low-pressure machinery is similar; the slide valves are of the usual D type, and balanced, and the axles and crank pins are of nickel and chromium steel. The centers of the pivots between main frame and the independent frames for each set of wheels are 26 feet 10 inches apart. The total heating surface is 2,632.36 square feet, to which the firebox contributes 129.06 square feet and the tubes, which are of the Serve pattern, and are 130 in number, contribute 2,503.3 square feet, the grate area being 32.29 square feet. There is space at the rear for five tons of coal.

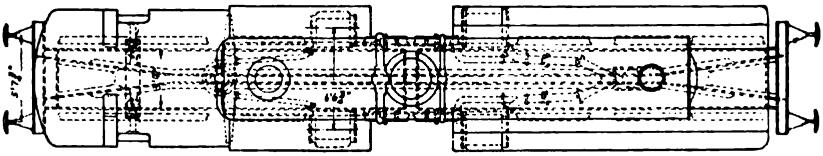
In running order, these four-cylinder



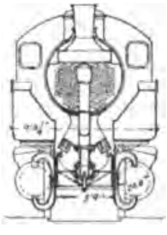
Longitudinal Section Articulated Compound Locomotive · Nord Ry France.



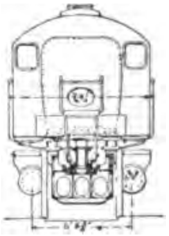
Side Elevation·Articulated Compound Locomotive



Plan - Articulated Compound Locomotive



Section



Section

Plan, Elevations and Sections, Compound Duplex Freight Locomotive

(From The Railway and Engineering Review) compound duplex freight locomotives have an aggregate weight of no less than 114.4 tons, although, it is interesting to note that the maximum weight on any pair of wheels is only 16.8 tons. In the course of some recent official trials, the engine illustrated herewith proved its ability to haul a load of nearly 900 tons, over a grade rising 1 in 80, at a speed of 12 miles per hour, the engine passing with ease over curves of 231 feet radius, whilst when it was traveling at a speed exceeding 43 miles per hour, the engines were perfectly steady. Considerable interest is being taken in Great Britain, and also in Continental circles, in the working of these two locomotives, as should the expectations of Mons. du Bousquet be realized, there is liable to be something akin to a mild revolution in steam locomotive design for heavy work.—The Railway and Engineering Review.

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*Locomotives of Great Power.**

Increase in the power of locomotives by the adoption of high pressures and of the compound principle. Improvements in construction from this point of view. Use of nickel steel.

Preliminary Documents.

First report (all countries, except America), by Mr. Edouard Sauvage, ingénieur en chef conseil de la Compagnie des chemins de fer de l'Ouest français. (See English edition of the Bulletin of December, 1904, p. 1639, or separate issue [with red cover] No. 17.)

Second report (America), by Mr. J. E. Muhlfeld, general superintendent of motive power, Baltimore and Ohio Railroad. (See English edition of the Bulletin of March, 1905, p. 1073, and of April, 1905, p. 1614, or separate issue [with red cover] No. 41.)

Report of the Second Section.

(See the Daily Journal of the session, No. 3, p. 41; No. 4, p. 69; No. 5, p. 85, and No. 7, p. 129.)

Mr. J. E. Muhlfeld read an abstract of his report.

The conclusions of this report are as follows:

"1. Locomotives of great power, within the present clearance and weight limits, may be designed and constructed to remain modern for several years and produce a higher average speed and tractive power with less cost for locomotive expenses per unit of power developed, than that given by locomotives of large capacity in use today or from the previous lighter equipment.

"2. The efficiency and economy predicted and anticipated from the use of locomotives of great power have not been attained. Their development has been too rapid on the basis of the theoretical calculations which did not include the necessary factors for practical results, and also owing to the disregard of simplicity in design, substantial maintenance and speed as elements of economy.

"3. Locomotives of comparatively recent construction have been built without proper consideration for the use of railroad standard designs, specifications, practices and processes which continued experience may have determined to be more suitable and interchangeable than the standards of locomotive builders.

"4. The present ineffective load should be reduced by the use of design and material which will combine the least weight and greatest desired strength.

"5. The elimination of those individual preferences, patented devices, fads and frills which have no real value, by the use of simple, practical design and construction, will produce more satisfactory general results.

"6. The mechanical department supervision has often been curtailed when expansion of organization and direct mechanical control should have been given to insure the desired performance. Changes in organization and methods have frequently been effected in preference to conservative management, with instruction, education and substantial recognition for the deserving rank and file.

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*Summary report of the discussions in the sections and in the general meeting, seventh session of the International Railway Congress, Washington, D. C., May, 1905, and published in the Bulletin of the Congress, September, 1905. Section 2—Locomotives and rolling stock; Question V.

President: Mr. Edouard Sauvage, ingénieur en chef conseil de la Compagnie des chemins de fer de l'Ouest français;

First Vice-President: Mr. François Mentsik, conseiller de section, chef de la section technique des chemins de fer au Ministère du commerce de Hongrie;

Second Vice-President: Mr. E. T. Jeffery, president, Denver & Rio Grande Railroad.

In the conclusions drafted by the sections, passages struck out or altered by the general meeting have been indicated by being enclosed in double brackets, while words added by the meeting are enclosed in single brackets.

"7. The locomotive maintenance and dispatch facilities have not always been developed to meet the proportionate increase in the locomotive dimensions, capacity and requirements, while slow line movement has made it necessary to increase average mileage by reducing terminal technical delay, during a period when more opportunity for maintenance and handling has been essential.

"8. The tonnage hauled per train has frequently precluded the making of an average speed between initial and destination terminals that would be productive of efficiency and economy in locomotive operation.

"9. Decreased efficiency has resulted from the irregular transferring and crewing of locomotives for long runs. The regular assignment of crews to locomotives and of suitable locomotives to shorter runs on regular districts, should accomplish the best results.

"10. Provision for the cleanliness and care of employes and equipment on the line and at terminals should receive more consideration.

"11. Personal supervision and investigation should govern in the construction and operation of locomotives of great power, whilst statistical information and correspondence should be limited and used with caution."

The president invited discussion of the various conclusions in this report.

Mr. J. F. Deems (New York Central and Hudson River Railroad) stated that he fully agreed with Mr. J. E. Muhlfeld that it is not desirable to consider solely the economical operation of locomotives, but the entire railway as a whole, constituting a means of transportation affording the most advantageous service.

He then examined different special points, especially the use of devices for increasing friction at starting, which in his opinion have not as yet given all the results that might be expected. He then spoke of mechanical stokers, which it would be also interesting to see tested further. A discussion ensued on the use of these devices, in which a prominent part was taken by Messrs. J. E. Muhlfeld, D. F. Crawford (Pennsylvania Lines West of Pittsburg), F. G. Wright (Great Western Railway, England), Alfred W. Gibbs (Pennsylvania Railroad), Th. Laurent (Orleans Railway). The conclusion arrived at was that up to the present time, these mechanical stokers do not appear to have secured any considerable saving of fuel and are still in the experimental stage; furthermore, they seem to have given only mediocre results in England on the Great Western Railway; and Mr. J. E. Muhlfeld expressed his belief that the hardest service required of locomotives of the existing types can be secured without the use of these devices. It would be very interesting, however, to continue experiments along this line.

Mr. J. F. Deems made some remarks on the most desirable forms of fireboxes. He has ascertained that narrow fireboxes wear out less quickly than wide ones, although the latter in certain cases appear to be essential in order to secure the necessary amount of grate surface. He cited also a number of cases of breakage of cylinders which might unquestionably have been avoided by the use of pressed steel.

Mr. R. P. C. Sanderson (Seaboard Air Line Railway) recommended at all events the use of hard cast cylinders with soft cast jackets.

Ideas were exchanged in regard to the use of the compound system, which appears to have been confined in America until recently almost exclusively to two-cylinder engines or four-cylinder engines without crank axles.

The reporter was of the opinion that increased engine capacity could be best attained by compounding, but his opinion did not appear to be shared by the majority of the American representatives who took part in the discussion. Some stated they were not yet prepared to express an opinion on this subject. The saving secured by compound engines appeared also less noticeable on lines of irregular grades than on lines of light grades, and the decreased consumption of fuel is largely made up by the increased cost of maintenance.

While admitting the merit of the compound system with four balanced cylinders, Mr. J. F. Deems expressed fears on the subject of durability of crank axles, even when made from special grades of steel, owing to the very great increase in the power of the engines.

Mr. H. H. Vaughan (Canadian Pacific Railway) stated he had an extensive experience with two-cylinder compound locomotives, and had noted in certain cases a saving of fuel, but also an increased cost of maintenance. He thought the use of superheating would give better results and he estimated at 10 per cent. the saving of fuel thereby secured in connection with two-cylinder compound engines. Data supplied from various roads showed that there will soon be in operation in

America 110 locomotives fitted with superheaters.

Referring to remarks made by the reporter regarding the insufficient investigation of certain details of high power engines, Mr. J. F. Deems called attention to the fact that these investigations were often rendered impossible by the haste with which orders had to be placed owing to the requirements of traffic.

After some remarks by Mr. A. Buchanan (Central Vermont Railway) and Mr. F. H. Clark (Chicago, Burlington and Quincy Railway), Mr. A. Lovell (Atchison, Topeka and Santa Fe Railway) reported experiments carried out successfully on his system for the comparison of compound and ordinary engines under identical conditions doing the same kind of work. These experiments have proved that the compound engines were more economical as to the expense in fuel, but that their maintenance was slightly higher. Noting especially the comparative experiments made between simple and compound engines with four balanced cylinders, both using liquid fuel, these have demonstrated that for long and heavy hauls simple expansion engines can not carry the same load as the compound engines and that the latter have shown a saving in fuel of 20 to 25 per cent. with respect to the former. In this special case, it has been observed that the boilers of the simple expansion engines require more frequent repairs than those of the compound engines. This was due to the fact that the fire had to be forced to produce sufficient steam.

Mr. A. Lovell thought positively that there is little difference between the cost of maintenance of compound engines and simple expansion engines, and if an increase in these expenses is observed, it is chiefly due to the increase in the power of the engines. He further added that the fears expressed by Mr. J. F. Deems as to crank axles do not appear to him to be justified.

Mr. E. Sauvage read the conclusions of his report.

These conclusions are the following:

"(a) *Wheel Loads.*—An important point in considering locomotives of great power is the wheel load permissible. Most of the lines of any importance allow at least 7.5 English tons; frequently the limit is 8.5 to 9 tons. It is 10 English tons on several English railways; in the United States there are instances where higher wheel loads are admitted. If we limit ourselves to the continent, wheel loads hardly exceed 9 tons (8.86 English tons). But it is probable that the traffic of trunk lines will require a new increase in the power of locomotives for fast trains, so that it will be desirable to have tracks which can stand wheel loads of 10 tons (9.84 English tons). However, in order not to fatigue the rails too much, it might be specified that this limit of 10 tons (9.84 English tons) is only allowed in the case of locomotives constructed so as to keep within sufficiently narrow limits, at the highest speeds, the variations of load which are produced at each revolution of the wheels.

"(b) *Gauge of the Tracks.*—The power of locomotives built for tracks of wider gauge than the standard, which are used in some countries (Spain, Portugal, Ireland, Empire of India, Russia) does not exceed that of locomotives running on standard gauge tracks. In order to benefit by the wider gauge, it would be necessary for the track to stand heavier wheel loads.

"(c) *Diameter of Driving Wheels.*—The diameter of the wheels hardly exceeds 2 metres (6 feet 6¾ inches) with the fastest locomotives: at most it amounts to 2.10 or 2.15 metres (6 feet 10 11-16 inches or 7 feet ⅝ inches). Very high speed locomotives often have wheels of a less diameter than 2 metres (6 feet 6¾ inches). This results in more than 300 revolutions per minute (this corresponds to a speed of 113 kilometers [70.2 miles] per hour with 2 metre [6 feet 6¾ inches] wheels). It would be desirable not to exceed this limit, in order not to have too much wire-drawing of steam; but the disadvantages of large wheels are too great nowadays. There would be an excessive increase in the weight of the locomotives and in the weight not carried on springs, and it would be necessary, as in the old locomotives, to reduce the diameter of the boilers. The disadvantage of great angular speeds is counteracted by giving large cross-sections to the steam passages, particularly by using piston valves.

"On the other hand, with locomotives having six or eight coupled wheels, very small diameters are not used; the diameter is hardly ever less than 1.4 metre (4 feet 7⅛ inches).

"(d) *Material Used.*—The tendency is to use metals of good commercial quality; the use of exceptional qualities, *e. g.*, of nickel steel, is very exceptional and does not appear to be extending. The applications of steel castings are becoming more and more numerous and varied.

"(e) *Boilers.*—In the case of boilers, a grate area of 3 square metres (32.29 square feet), with a heating surface of 75 to 80 times the size, is obtained by the usual construction, with narrow firebox. It appears to be difficult to obtain a much larger grate area on this plan, and this leads to the use of fireboxes extending over the wheels. The larger diameter wheels of the high speed locomotives must then be below the barrel of the boiler; this can be done in the case of the Atlantic type. In Europe, several applications of these extended fireboxes now begin to be seen, and it is probable they will multiply. For a long time, hesitation was shown in placing the grate above an axle, particularly in England; now, that position of the grate is generally accepted. No doubt the same will happen with regard to the extension of the firebox above the wheels.

"Very high pressures (14 to 16 kilograms per square centimetre [199 to 228 pounds per square inch]) are used at present, particularly with compounds. They necessarily involve an increased cost of maintenance of the boilers.

"Serve ribbed tubes are generally used, particularly in France; they are useful by making it possible to have a larger heating surface with a boiler of given size. The tubes must be cleaned out frequently and with care.

"(f) *Compound System.*—As a general rule, it is well established that the compound system results either in a certain economy of fuel for the same power, or more frequently an increased power for the same fuel consumption. In some few cases, these advantages have not been realized; this may depend on the particular use made of the locomotives or to some defects in the application of the system.

"The use of four separate cylinders, acting by twos on cranks placed at 180 degrees to each other, makes it possible to obtain greater power without fatiguing the mechanism too much; this arrangement balances the reciprocating masses, without producing vertical disturbances. As far as possible, the cylinders must act on two different axles, but these are coupled up.

"It is advisable that each system should have a valve gear of its own, and that it should be possible to operate independently the reversing shafts belonging to the two groups of cylinders, high pressure and low pressure.

"(g) *Valve Gear.*—No mechanism has succeeded in replacing the valve gear consisting of a slide valve and link motion. The link motions most generally used are Stephenson's and Walschaerts'. Valve gear without eccentrics has the disadvantage of being disturbed by vertical displacement of the axles.

"The only modification of these ancient systems, at all common, is the replacement of flat slide valves by piston valves, which reduce friction, and consequently wear, and make it possible to arrange larger passages for the steam. On the other hand, a piston valve may leak; it makes it absolutely necessary to have a valve for admitting air to the valve chest for running with regulator closed, and it is advisable to fit relief valves on the cylinder ends.

"(h) *Motion.*—Tail rods are to be recommended as soon as the diameter of the cylinders attain or exceed 500 millimetres (1 feet 7 21-32 inches). The lubrication of the slide valves and pistons is insured in a continuous manner by lubricator pumps or by sight feed lubricators, placed under the eyes of the crew.

"(i) *Power of Locomotives.*—With the present limits of weight admitted on the main European systems, locomotives can be built, thanks to the use of high pressures and the compound system, giving 1,500 to 2,000 indicated horse-power (1,480 to 1,973 indicated British horse-power).

"(j) *Locomotives for High Speed Trains.*—For heavily loaded high speed trains, locomotives of the Atlantic type or locomotives with six large coupled wheels are used. The choice between the two types depends on the nature of the service, on the profile of the lines, and also on the maximum wheel load allowed.

"(k) *Locomotives for General Purposes.*—The locomotive with six coupled wheels and bogie, the wheels having a diameter of 1.5 to 1.8 metre (4 feet 11 inches to 5 feet 10⅞ inches), is eminently suitable for passenger train service, and the same locomotive can also haul goods trains satisfactorily.

"(l) *Locomotives for Heavy Goods Trains.*—For heavy goods trains, there is a return to locomotives with eight coupled wheels, by preference with a leading pair of carrying wheels. These locomotives can exercise tractive efforts of more than 10,000 kilograms (22,000 pounds); they are limited by the strength of the couplings used in Europe.

"(m) *Tank Locomotives.*—A very fair amount of attention is being paid to the design of tank locomotives with six or even eight coupled wheels, either for suburban train services, where very quick starting is necessary, or for very long distance runs. A leading pair of wheels or bogie is added either at one end, or at both, according to the nature of the service. Having two bogies, however, results in having very long and very heavy locomotives.

"For the convenience of the service, these locomotives have long foot-plates for the crew, and carry large quantities of water and particularly of fuel, at least as much as is carried in the small separate tenders which are still in use.

"(n) *Locomotives with Flexible Wheelbase.*—The only type of powerful locomotive with its whole weight adhesive and arranged to run over specially sharp curves, which is largely used, is the Mallet type. However, most railways content themselves with locomotives of the ordinary types, without flexible wheelbase.

"(o) *General Remarks.*—The railway industry does not escape a law to which nearly all industries are subject, owing to the rapid progress made in engineering, of almost continually modifying its stock. As soon as new locomotives have been designed, which are very superior to those used previously, one is tempted to think that to some extent finality has been reached, or at least that during a sufficiently long period it will be possible to do without any new designs. It appears very tempting to keep for a long time to standard types, which are cheaper to build and easier to maintain; but progress, which does not stop, hardly allows definite types to be determined.

"Thus on European railways, we find locomotives running developing 1,500 and even more indicated horse-power (1,480 and even more indicated British horse-power); but the continual increase in train weights and train speeds makes it necessary today to look for still more powerful locomotives, if not for actually existing needs, then at least for the needs of the immediate future.

"But the old stock need not, therefore, be given up entirely, and the variety of existing railway services makes it possible to utilize locomotives well which are already of older date, but care must be taken that the unavoidable age of such locomotives, which is the result of the efflux of time, is not increased by an artificial age, by making them several years old already when building them."

The conclusions of this report were then opened for discussion jointly with those of Mr. J. E. Muhlfeld's report.

Mr. Moffre (French Midi Railway) stated that if some American engineers find compound engines of small advantage because the increase in the cost of maintenance exceeds the economy in fuel, this opinion is not shared either by the French engineers nor by the engineers of the adjacent countries. It is true that a comparison is often difficult, as there are no engines exactly similar and doing exactly the same work. On the Midi Railway he had occasion to compare ordinary engines with double cylinder compound engines which were rebuilt from the former and, therefore, had exactly the same boilers; this comparison has shown an economy of 20 per cent. in fuel in favor of the compound engines. In France, the arrangements with four balanced cylinders is generally preferred, as it is thought to give a better distribution of work and a balancing of parts in the alternating movement.

Mr. Moffre also thought that if compounding should at some time be abandoned for superheating, the arrangement in four cylinders will still be the best. As to the question of crank axles, it does not exist in Europe, where axles of ordinary steel can be seen seven or eight years old, and having run more than 600,000 kilometres (some 370,000 miles) without developing any cracks. Still better results may be expected with special steels

The cost of maintenance of the machinery of four-cylinder engines should in no case exceed by more than 40 per cent. that of the ordinary engines; in some special cases, a saving has even been observed. As to the cost of maintenance of boilers, that increase is solely due to the greater pressure, and it could without doubt be reduced by making certain changes in the present form of construction.

Mr. William McIntosh (Central Railroad of New Jersey) stated that he favored compound engines, which, according to him, are an improvement, and he thought that if the first types have not realized all expectations, there is no reason for condemning the system, which can still be improved.

Mr. Karl Steinbiss (German Government) reported on experiments made in Germany during twenty years on compound engines of various types with two, three or four cylinders of the systems of Von Borries, Mallet, etc. At present, more than a thousand engines of these types are in service in Germany, both on passenger trains, as well as on freight trains, and they give the best results with respect to economy. The saving in coal is on an average 10 per cent.; excepting the starting valves, the repairs are not more costly than for the ordinary engines.

Recently another great question has been investigated, that of superheating. Thanks to the use of the Schmidt superheater and to the improvements made by Mr. Garbe, great progress is expected with simple engines with two cylinder engines, with cylindrical or balanced valve chests. In concluding, Mr. Steinbiss remarked that German locomotives can not attain such great dimensions as American engines, because the load per wheel is limited to eight tons in general and to nine tons in special cases.

Mr. Alfred W. Gibbs made some remarks in regard to the de Glehn type of locomotive built for his company by the Société Alsacienne. This engine represents a very fine type of construction and is a very handsome example from the standpoint of lightness of parts; still the distribution of parts does not seem to him superior to that in American engines, and he stated that he had had a great deal of trouble with the copper staybolts and had had many cases of hot boxes. He would be very glad to have the opinion of French engineers on these points, and also regarding the best type of crank axles to adopt. He added that the de Glehn locomotives have excellent qualities in the matter of quick starting.

Mr. Th. Laurent (Orleans Railway), replying to Mr. Gibbs, admitted that copper staybolts also give a great deal of trouble in France; that the upper rows have had to be replaced with manganese bronze staybolts, and they are still seeking a better metal. But these difficulties are also experienced with the American engines belonging to his company and appear inherent to the use of high pressure. As to hot boxes on drivers, he had tried American lubrication with wool waste and derived no advantage from it, and after many cases of hot boxes with this system he has returned to the system of wick lubricators, which, on the whole, seems to him preferable.

Returning to the question of firing, Mr. Th. Laurent reported that by using grates inclined at an angle of about 18 degrees, a single fireman can fire 1,800 kilograms (about two tons) an hour on the powerful engines of his company. As to the charge of lack of elasticity, which some engineers allege against compound locomotives, he declared that this complaint is not justified. It has been shown, in fact, by very accurate tests made by his company, that, within limits of load varying 50 per cent., the consumption of fuel per unit of work does not vary over 5 per cent.

Mr. Asselin (French Northern Railway) stated that on his line copper staybolts have been replaced entirely with manganese bronze staybolts, the heads of which, it is true, burn out more quickly than those of copper staybolts, but by being careful to replace all staybolts whose heads have burned out, whenever the engine is laid off for any reason, all objections are overcome. For crank axles his company has lately been using oil tempered gun steel, which gives entire satisfaction.

Mr. Dubois (French Western Railway) declared that his company had not observed any difference in wear between the three designs of crank axles which they have tried, and they have finally taken to using the least expensive design, viz., parallel crank axles.

Mr. Bowman Malcolm (Midland Railway, Northern Counties Committee, Ireland) estimated the saving of fuel by the use of compound engines at 10 per cent., and thought that they do not involve any perceptible increase in cost of maintenance. In his opinion the difficulties experienced with them at the start should not interfere with their general adoption, and he spoke particularly highly of the four-cylinder system.

After a remark regarding the maintenance of boilers and especially on the leakage at the joints with the tubes and the rupture of staybolts, a discussion arose in which Messrs. H. C. King (Great Western Railway, England), Th. Ronayne (New Zealand Government Railways), Bowman Malcolm, Alfred W. Gibbs and J. E. Muhlfeld took part.

It appeared from the discussion that, in the United States, the use of soft steel fireboxes, with well spaced wrought-iron staybolts, proves satisfactory, the use of soft steel for staybolts being limited to Belpaire boilers. Some engineers prefer, if possible, to leave the fires banked during the housing of the engine, to avoid cooling and contraction. Mr. Alfred W. Gibbs stated that the wear of fireboxes is not so rapid as it is commonly believed to be. Thus on his system, having 3,300 locomotives in service, 700 of which are heavy engines, in late years not more than 65 or 70 fireboxes have to be replaced annually. In a boiler having a life of twenty years the firebox has been replaced on the average twice. Bad quality of water and lack of care in construction are the most frequent causes of boiler defects.

Mr. F. G. Wright observed that experiments were made twenty years ago with compound locomotives on the Great Western Railway. These trials were given up because of damage due to the water entrained in the cylinders, because of poor design. They have been taken up again, and last summer his company put into service a de Glehn compound locomotive which for the first time covered the distance from London to Plymouth (246 miles) without a stop. Mr. F. G. Wright believes that the superiority of this engine consists in its two independent mechanisms.

On the compound engines of the London and Northwestern Railway, where the two mechanisms were connected together, the results obtained were not so good, and a very noticeable improvement was obtained after separating the distribution. The Great Western Railway has ordered two other engines of the same type, but of higher power.

Mr. Th. Ronayne said that the need of increasing the power of engines has also made itself felt on the railroads of New Zealand. He has ordered four locomotives of the de Glehn type to be built, and the opinions expressed at the congress by other members indicate to him that he is on the right road. He reported that he has experimented with axles of nickel steel with little success. The use of the latter material has given better results with piston rods. and it is at the present time being tried for smoke tubes. He also intends to experiment with spiral tubes, in order to do away with the flying of sparks through the stack. The cylindrical valve boxes used in connection with the Walschaerts distribution give full satisfaction, and he prefers them to the balanced valve boxes.

Mr. Tordeux (French Eastern Railway) stated that all locomotives built for the last seven years by his company have four cylinders. It has 260 of this type already in service, and will soon have 320 or 330. The main reason for adopting the compound system on his roads is the economy in coal. There are no coal mines in the vicinity, and the cost of fuel is about 18 francs per metric ton (14s. 7d. per English ton). The first hundred compound locomotives which were built had flat valve boxes. After the Universal Exposition of 1900 the comparative experiments which were made with engines having cylindrical valve boxes and those with flat boxes have shown that the former behaved better, that they were maintained easier, and that they produced a saving in fuel of 4 to 5 per cent., compared with the latter, which is due to the reduced throttling of the steam. All new locomotives are built at present with cylindrical valve boxes. The French Eastern Railway has also been making for a year past experiments with steam jackets, but without appreciable results. As to lubrication, the exchange of the wick lubricator for the American syphon lubricator has reduced the consumption of oil from 30 to 40 per cent. The use of the latter device is therefore being extended.

Mr. D. F. Crawford confirmed what had been said on the advantages of cylindrical valve boxes. Trials made covering a period of three years by his company on an equal number of engines of the same type, one series having flat valve boxes and the other cylindrical, proved the superiority of the latter for passenger locomotives. This system reduces the throttling of the steam; it causes only an insignificant wear, while the flat valve box requires the adjustment of the distributing mechanism between two general repairs, and, finally, notwithstanding the extreme balancing of the flat box, the lifting mechanism is much more difficult to handle. Similar trials are being made on freight engines.

Mr. J. E. Muhlfeld then summed up the various points which were brought out by the discussion, and pointed out the main difference between American and European practice, as follows: The working pressure of the boilers is somewhat higher in the United States than in Europe; the slow adoption of the compound system in America, which is attributed to difficulties encountered at the beginning and to the different objects aimed at in compounding, which in Europe is chiefly for the saving of fuel, while in the United States increase in tractive force is principally desired; the difference in the construction of fireboxes and staybolts, etc. He considered that superheating was not sufficiently developed in his country and that it should attract the attention of engineers. He also called attention to the advantage which heavy tank engines for certain classes of service offer by utilizing the weight of the fuel and water to increase the friction on the rails, besides suburban traffic and shunting, for which this kind of engine is used exclusively in America. There are also very few locomotives with flexible wheel bases in the United States.

Mr. J. E. Muhlfeld's last remarks led Mr. Asselin (French Northern Railway) to refer to the construction on his line of an engine of great power, designed by Mr. du Bousquet, the chief engineer, which is simply a tender engine with flexible wheel base. It is a compound freight engine, working at 228 pounds pressure, with an exceptionally powerful boiler for a European locomotive, as it has a capacity of 283 cubic feet, 32 square feet of grate surface, and a heating surface of 2,620 square feet, of which 129 square feet is firebox. There are 130 tubes of the Serve type, 2¾ inches outside diameter and 15.6 feet long.

The object aimed at was to build an engine capable of hauling 1,100 American tons on a 1.2 per cent. grade at a speed of 12½ miles an hour, and this same load on lines having no gradients exceeding 0.5 per cent. at a speed of at least 30 miles per hour. With this object, the drivers were given a diameter of 4 feet 6 inches.

Mr. Asselin gave some details of the construction of this locomotive, which is not a Mallet engine, as its boiler rests on two bogies, with flexible wheel bases. For this purpose the two ordinary bolsters of the engine are replaced by a single center beam, which carries the boiler and rests on the two trucks.

Like the Mallet locomotive on the Baltimore and Ohio Railroad, of which Mr. J. E. Muhlfeld spoke in his report, the two driver trucks are each furnished with three coupled axles. As there is a fourth carrying axle placed on each truck, the weight per axle does not exceed 16½ tons. The steam is led to the high pressure cylinders mounted on the rear truck through the center bearing of the truck. Connection with the low pressure cylinders is made by means of articulated metal pipes. The total length of engine is 53 feet. Weight, empty, 85.8 tons, and loaded, 112 tons.

Following the same line of thought, Mr. Flobert (Northern of Spain Railway) described an engine in course of construction for his company and intended for hauling coal trains at a speed of 20 kilometers (12½ miles) an hour on a line with a continuous grade of 2 per cent. and numerous curves, the radius of which is usually 984 feet, but sometimes as low as 820 feet. This engine is composed of two locomotives with three coupled axles and pony truck ahead, coupled to a single rear tender. The adhesive weight is 93 tons; the total weight of the whole engine is 132 tons; the total length is 82 feet, which corresponds to a load of 15.4 tons on each driving axle and 3,200 pounds per foot of total engine length, which figure can not be exceeded, owing to the limitations imposed by the dimensions, etc., of the track. The tractive power is 26,400 pounds. It takes one driver and two firemen to handle the engine.

The president read the following draft of conclusions to be submitted to the general meeting.

This draft was accepted after Mr. J. E. Muhlfeld had drawn attention to the need for paying more care to details of construction and to maintenance of the engines. He pointed out that the maximum load per axle allowed in America was 62,000 pounds and the maximum weight for locomotives was 234,500 pounds for a wheel base of 30 feet 6 inches.

Conclusions.

"The power of locomotives is more limited in Europe and America, owing to the lower allowance of weight per axle.

"European engineers generally agree in thinking that compounding admits of the construction of engines giving the maximum power and economy.

"This system utilizes the steam very well and does not appear to increase to any noticeable extent the cost of maintenance of locomotives; it does make the maintenance of boilers more difficult, but that is due to their increased size and higher working pressure, which are necessary in all cases. Almost all locomotives built in France in recent years have four balanced cylinders. These engines, as well as compound engines of other systems, are also employed in other European countries, especially Germany, Austria, Spain, etc. Several engineers in Great Britain and Ireland express equal satisfaction from their use, and insist on the advantage of separating the high and low pressure machinery. A number of American engineers also express opinions favorable to compound locomotives, which have given satisfactory results on the Atchison, Topeka and Santa Fe Railway; the sentiment on this matter is, however, less unanimous in the United States than in Europe. The congress has been informed of experiments made in New Zealand with four-cylinder compound locomotives.

"The introduction of American locomotives in Europe and European locomotives in America has had the advantage of making known on both sides some interesting details of construction, particularly the light weight of the parts of European locomotives and the syphon and sight-feed lubricators of American locomotives.

"Applications of superheated steam seem to increase in number, especially in America and in Germany, and seem to give good results.

"The constantly increasing use of cast steel is observed, which in the United States has even been tried for cylinders.

"The use of the Walschaerts motion gear is extending in the United States.

"Generally speaking, all the engineers who have spoken of cylindrical valve chests appear well satisfied with them.

"A number of tests of automatic stokers have been made in the United States and on the Great Western Railway of England, but as yet the results have not been definite. It has also been found, both in America and in England, that without the aid of these devices, but with proper arrangements of grates, the heaviest firing necessary at the present time can be effected without difficulty.

"Finally, the congress has examined the use of articulated locomotives of great power on lines of irregular grades, particularly Mallet locomotives and those designed by the French Northern and Northern of Spain Railways."

These conclusions were adopted by the general meeting.

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Surprise Checking as a Factor of Safety.

In most railway collisions there are complications which might prevent any definite conclusion as to individual responsibility, but in that which took place at Paoli, on the Pennsylvania Railroad, the facts are so plain and their significance is so certain that there need be no difficulty in reaching a decision. It is peculiarly unfortunate that the present instance should have taken place on a railway which is noted for the comparative perfection of its organization, both physical and personal.

During many years the Pennsylvania Railroad spent annually for signals more money than was expended by the half dozen next greatest purchasers, and the effort to equip the line from end to end never has lapsed. But beyond this, it has adhered steadfastly to the best forms, without a glance aside at any specious argument for reducing the cost by cutting or paring in detail.

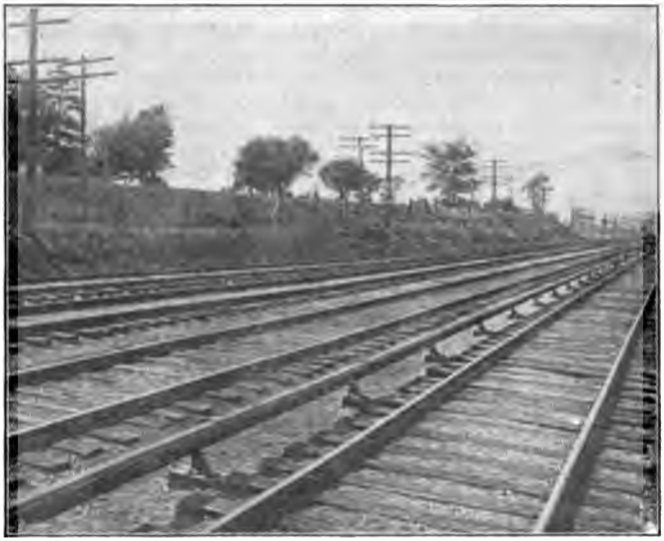
Of course, the engineman disobeyed his signal; and it has now become so certain that a danger signal was violated, where a collision occurs within the limits of an interlocking plant, that it is scarcely necessary to confirm the fact by observation. There is not a possibility of error by the operator which can not be guarded against with some well proved device, and at this spot the operator contributed not a suggestion of actual error to the result. It might have been better to hold the express train at a point 1,000 feet away, where it left the straight track, but even this is doubtful, and we must return always to the fact that a danger signal was displayed.

To account for what happened is easy: The engineman of a fast train was off his usual route and anxious to make time. Yet he was not moving fast, the day was clear, and he went ahead simply on the assumption that all was right, although everything was wrong. It is purely to avoid the necessity for this assumption that signals are installed at great expense. Scarcely can we conceive of a plainer case, and for such cases there is no preventive but discipline. Excuses await the engineman who forgets his orders to stop at a certain station, or even who "loses" himself in a fog. This man, however, had nothing to remember but to stop or go ahead, as the signals which he passed dictated; he was not "lost," and if, previously to the wreck, he had been asked about his confidence in these signals, would have expressed a perfect reliance upon them.

Until the indications of a semaphore can not be ignored by the engineman, such occurrences will continue to arise to shock the community and destroy its confidence. Not the least injury done is the confusion which is wrought in the minds of some railway men themselves as to whether anything is of use in preventing collisions. It is suggested occasionally that automatic train stops might be effective, but few experienced signalmen would subscribe to this idea. Indeed, as with derails, the cure in some cases might be worse than the disease.

But the effect of "surprise checking"

has come to be recognized as certain, and, on those lines where it has been tried, the enginemen—the very persons who might be expected to object to the practice most decidedly—are found increasingly to favor it, both as a general measure and for their own protection. At the May meeting of the Railway Signal Association this practice was a topic of discussion, and not a voice was raised against it. It is a means of discipline which is ready at hand for any railway officer to use, it costs something in effort, but little or nothing in money, and it must be regarded now as an essential factor in all safe railway operation where fixed signals exist.—The Railway Age.



NEW YORK CENTRAL UNDER-CONTACT THIRD RAIL

(From The Railway Age.

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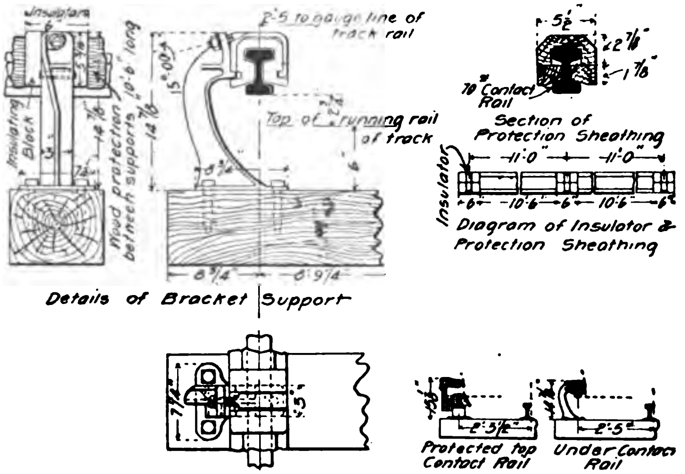
New York Central Under-Contact Third Rail.

When the plans for electrifying the New York district of the New York Central and Hudson River were commenced the problem of delivering current to the trains from a conductor which should not be a source of danger was immediately considered. This question has been widely discussed and therefore the plan adopted by the New York Central and illustrated herewith is of considerable interest. A form of third rail conductor was early adopted and various means of protecting the rail were considered, with the result that a protective sheathing which leaves only the under surface exposed has been adopted. The arrangement consists of a 70-pound section bullhead rail suspended at 11-foot intervals by two-part insulators, which are locked in position by means of bolt-end straps. The parts are supported by cast-iron brackets, which are attached to extended crossties by means of lag screws. Between the insulators the rail is covered upon the top and sides with painted, well seasoned, long-leaf yellow pine. The rail is supported loosely in the insulators and is allowed a slight movement in the pine sheathing, so that the suspension is flexible and adjusts itself to inequalities in the roadbed. The rails are bonded between insulators, copper bonds being attached upon both sides of the lower head, the sheathing being notched to accommodate the expansion loop. The contact shoes are of the same type as used for top-contact rails, except that the springs are arranged to draw the shoe up instead of down.

In order to afford the same clearances which exist upon the Long Island Railroad, and which will be used in the Pennsylvania terminal arrangements, the rail was required to be placed ¾ inch further away from the outside track rail, but it has been decided to increase this amount to 1½ inches, thus affording additional clearance for steam railway equipment. The top-contact rail is 3½ inches above the track rail, while the under-contact rail surface is 2¾ inches above the track. As the tension springs upon the shoe tilt it up upon leaving the under-contact rail, the shoe will clear the top-contact rail if the equipment is to pass from one system to the other, or if desired, the shoes may be arranged to work on both types of rail so as to permit interchange of equipment. Several materials for the insulators have been tried, including clay, reconstructed granite, rubber, porcelain and indurated fiber. About one mile of track at Schenectady has been equipped upon this system and has been used experimentally for over three months without developing any serious fault. In this experimentation the clay insulator has proven the strongest and probably will be adopted as the most satisfactory.


Insulators
Insulating Block
Wood protection 10'-6" long between supports
2'-5 to gauge line of track rail
Top of running rail of track
Details of Bracket Support
70# Contact Rail
Section of Protection Sheathing
Insulator
Diagram of Insulator & Protection Sheathing
Protected Top Contact Rail
Under-Contact Rail

New York Central Under-Contact Third Rail

(From The Railway Age)

In comparing the cost of installing the under-contact rail with the cost of the top-contact rail with the sides sheathed and a protective covering above, as illustrated, the following figures have been obtained: Under-contact type, $4,100 per mile; top-contact type, $4,325 per mile; a saving of $225 per mile in favor of the former, which in the electrification of the New York Central's terminal zone amounts to about $64,000. A large saving also is made in the number of parts, the former requiring 7,600 pieces per mile, as compared with 24,500 for the latter. The expense of maintenance is expected to be considerably less, on account of the continuous support, which does not encourage warping and cracking of the sheathing, protection against corrosion of the rail itself, elimination of insulator breakage by reason of the flexible support, elimination of numerous bolts which require attention and which aggravate splitting of the sheathing, and a great advantage is claimed in securing more efficient work by track men by reason of the superior protection of the under-contact rail. Several advantages are claimed in operation, the most important of which is protection against sleet and absence of any part to hold drifted snow, while the superior elevation above the track is believed to prevent accumulation of snow, ice and rubbish against the rail and the attendant leakage of current. The feature given greatest weight in this new design is the increased safety to the public and to employes of the company, which it is believed will tend to remove much of the prejudice in the minds of railroad men to the electrification of steam lines. The accompanying illustrations show the experimental rail, as compared with the protected top-contact rail as installed at the experimental track at Schenectady. This design of under-contact rail originated with Mr. William J. Wilgus, vice-president New York Central, and has been brought to its present stage by Mr. Wilgus and Mr. Frank Sprague.—The Railway Age.

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The Latest Makes of Lubricators, Their Operation and Maintenance.[*]

To the Officers and Members of the Traveling Engineers' Association:

Gentlemen—When this subject was selected last September as one on which an interesting paper could be prepared it was thought that possibly the coming year would see lubricators brought out that operate on different principles from those in service in past years. So far there is nothing very radically different in the operation of the lubricators coming into service in 1905 from those of the earlier years. They are operated on the same general principle, that of hydrostatic pressure from a water reservoir located above the oil reservoir which forces the oil out of the oil reservoir past a regulating valve, from which it flows through a chamber with glass sides where the drop of oil is visible; and pipes or passages to equalize the steam pressures in all parts of the cup. There are, however, many points of difference in the construction of the modern cup which should be understood in order to operate them correctly. In the cups made some years ago chokes were used at the openings where the oil passed out of the cup into the oil pipes to keep the steam pressures equalized in the cup, and they did this part of the work satisfactorily.

One of the prominent makers still retains the choke at this opening, and in addition uses a steam chest oil plug with a restricted opening where the oil pipe connects to the steam chest. The choke at the cup that previous to 1899 had an opening through it made by a No. 56 drill now has an opening made by a No. 54 drill. The opening in the steam chest oil plug should be not less than 3-32 nor larger than ⅛-inch. For the information of those who are not familiar with drill numbers I will state that a No. 54 drill is .055 in diameter, a No. 56 drill is .046, so a No. 54 drill is .009 larger than a No. 56. To reduce this to the fractional parts of an inch, 3-64 is .046875, so a No. 56 drill is a shade smaller than 3-64 inch.

The air pump choke is made with the same-sized opening as the ones used for the oil pipes leading to the steam chests.

Other makers have located the choke at the steam chest end of the oil pipes; in most instances it is movable or has a variable opening, and consists of a valve that can move on its seat. The use of a choke at the steam chest end of the oil pipes has the effect of maintaining the same pressure in the oil pipes that there is in the cup, whether the engine is shut off and drifting, or working steam. This makes the oil pipes a part of the cup as far as the equalization of the steam pressures therein is concerned. For a long time there were objections to the use of a choke at the steam chest, but the adoption of it by several prominent makers shows that any troubles from that idea have been dissipated.

With the use of a choke at the steam chest end, whether it is fixed or variable, steam passing through it when the engine is shut off is likely to enlarge the opening, so that they should be examined at intervals and if found too large should be replaced with chokes or valves of standard size.

The old difficulty of the choke getting stopped by foreign matter, such as small particles of coal or waste, is rarely met with; possibly the fact that most of these steam chest chokes contain a valve that is movable has something to do with keeping these openings free. So far as the writer knows, a choke is still kept in the cup where the oil goes out to the air pump, by all the makers.

The most radical change in the late designs of lubricators is in the shape and location of the sight-feed and register glasses. The many engine failures and injuries to the men in the cab from the bursting of the glass tubes used in the old type of cups have shown the necessity of some form of glass less dangerous for observing the flow of oil from the cup and the height of oil in the reservoir. The manufacturers have met this difficulty by re-designing the cups and putting in a thick flat or disc glass which has done away with the trouble so serious with the glass tubes, of exploding when under strain of the ordinary working pressures. Possibly the higher working pressures of the modern boilers and the higher temperature that goes with this higher pressure may have had a great deal to do with the need of a better glass.

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[*] Paper by Mr. C. B. Conger, presented before the convention of the Traveling Engineers' Association at Detroit, Mich., September 12-15, 1905.

With the flat glasses there is not as good a view of the drop of oil as it passes up away from the oil nozzle or feed nipple as we had with the glass tube. With the glass tube light could come in on the oil from all sides, so as to give a better light on the drop of oil and also show the drop of oil from any direction from where the tube was visible. With the flat glasses making the two opposite sides of the sight-feed chamber, the light can come in from only one way towards the observer, so the drop of oil is only plainly visible when the light shines directly through the sight-feed chamber between the glasses. As long as the glasses stay clean this is not a very serious objection, but it is reported that in many cases the flat glass gets dirty or gummed up on the inside.

With a sight-feed lubricator there is a tendency for the gummy matter in the oil to attach itself to the sight-feed nipple or oil nozzle, to the inside surface of the glass and the passages in the cup which the oil can touch. Observers say that this deposit of gum is more marked where the oil and water in the cup and sight-feed chambers is kept at a high temperature by the steam passages that go through the body of the cup.

This is a good argument for the design of a cup that keeps the oil cool, just so long as it does not get so cool as to affect the rate of feed. Cleaning out the cup with a strong solution of lye is the remedy for the deposit of gum in the cup. If the glasses get gummy put a small piece of strong yellow soap or a piece of soda ash as large as a small bean in the sight-feed chamber. This will dissolve the gum and clear it out. The strong alkali water will make the drops of oil very small, but as it gets weaker the drops will resume the normal size, which is said by the Galena Oil Company to be about 6,500 drops to a pint. A mixture of engine oil will give larger drops, so that there will be less drops in a pint.

As it has been proved by tests that a drop of oil passing up through a tube filled with hot water travels at a rate of thirty feet per minute or one-half foot per second, the necessity of having a good view of the drop in a good light will emphasize the necessity of clean glasses. Possibly locating the tip of the oil nozzle as nearly on a line with the bottom of the glass disc as possible will give a longer view of the upward flight of the drop of oil.

In some cases the glass gets rough on its inside face next the water or oil in the cup so that it affects the passage of light. In some cases the register glasses in the oil reservoir seem to suffer the most, in others the glasses at the sight-feed opening. The manufacturers are at work now locating the trouble and will no doubt be able to inform us as to the cause and remedy.

It is stated by one of the experts that a flat glass that is corroded can be ground and polished to a proper surface.

One manufacturer furnishes an extra glass complete with its case, gaskets, washers and gland put together, ready to use in case it is necessary to change a glass for any defect. This is better than carrying the spare parts in the tool box, where they get banged around and bruised out of shape, so that they are not always in good order when wanted.

One of the gratifying improvements generally adopted in the later make of cups is the reduced number of screwed joints and separate parts used. The old cups with separate feed arms contained so many screwed joints that they had a good many chances to leak when put into service. A close acquaintance with a big monkey-wrench operated by a strong arm would intensify this trouble.

The later makes of the bull's eye type have less than half as many parts and most of these parts are so designed that screwing them up to a solid tight joint does not throw them out of line with the other attachments. They are made with better seats at the joints and coarser screw threads so there is less liability of getting them cross-threaded when put back after removal for repair or cleaning. In general there is a tendency to simplify and make all parts to suit the hard service they now receive on locomotives.

Some of the makers have a cup with four and five feeds to be used on four-cylinder compound engines. Two of these feeds supply the high-pressure cylinders; two supply the low-pressure cylinders, and one the air pump. With Cross compound locomotives one of the feeds goes to the intercepting valve. With a good hand or auxiliary oiler on the cup, locomotive lubricators rarely give out altogether.

The later makes of cups have much larger steam pipes or equalizing tubes. Most of them are ⅝-inch inside diameter for the cylinder feeds; in some the air pump has a ⅝-inch pipe, in others it is ¼-inch. Larger equalizing tubes are no doubt necessary to maintain full boiler pressure in the oil pipes clear to the steam chest and this requires a larger steam supply pipe from the boiler. Three-quarter-inch inside diameter is now very generally used; with this size of pipe it is very evident that the steam valve at the boiler must be of generous size and wide open to operate the cup according to the manufacturers' instructions. The supply of steam should not come from a turret, but from the steam dome direct, so it will be dry steam at boiler pressure. Steam from a turret is not always at boiler pressure.

So much for the general design and construction of the modern lubricator, which we term the "Bull's Eye," from the shape of the sight-feed glasses. With the construction understood it will be an easy matter to operate one of them.

First, the entire cup in all its parts must be clean and free from any foreign substance that will clog up any of the openings or lodge on the seats of the valves and prevent their being tight n closed. The glands and packing around the valve stems must be in such shape that neither steam, water or oil can leak past the stems; this also applies to the glasses, their packing rings or gaskets and the cases that hold the glasses. Do not have any sharp bends or pockets in any of the pipes to trap the water or oil. Keep the spare glasses and gaskets where they will not get damaged. Keep the oil in a covered vessel to prevent coal or particles of waste from getting in it. A strainer for the oil comes handy to the careful man. If you suspect the cup is dirty inside, when it is empty of oil, blow it out thoroughly with steam before filling. Fill the oil reservoir full of oil in case there is enough at hand; if not, finish out with clean water. Turn the steam at the boiler full on to the cup and be sure the water valve between the condenser and the oil tank is open. The sight-feed chambers should fill up with clear water and the condenser should be full of water before you start the oil feeds. Regulate the supply of oil by the regulating valves. When necessary to use the hand oilers, with one make of cups it is necessary to shut off the boiler steam from the cup when you shut off steam from the engine. With others it is not necessary to shut off steam from the cup.

To clean out the sight-feed nozzles, close the water valve tight, close all the valves under the nozzles except at the one that needs cleaning out; then open the drain valve of the oil tank, the contents of the sight-feed chamber followed by steam from the equalizing tube will pass through the nozzle into the oil tank and clean it out. When the sight-feed chamber needs blowing out, close the oil regulating valve and open the drain valve connected to that chamber, blow it out thoroughly and let it fill up again with clear water. Blowing out the sight-feed chamber will not always clean off the glasses; in such a case if the steam can be shut off from the glass, the glass can be removed and cleaned with soap. It is a good plan to have a new gasket to put in. When removing a glass for any cause this will usually insure a good joint.

To clean out the air pump choke, shut off steam from the cup at the boiler to the cup and the engine, close the water valve and the oil regulating valves to the steam chests. With the oil valve to the pump open when the drain valves to air pump sight-feed chamber are open, steam will come back from the pump and blow through the choke.

There are no doubt several lubricator experts present who can add many interesting facts to this paper in regard to the special type of cup which they represent. Some of the cups require one style of operation in regard to the special features which they possess, other designs have other special features. We are indebted to them for much of the information in this paper and it is hoped that they will give us from their store of information all the facts available.

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The Cause of Crystallization.

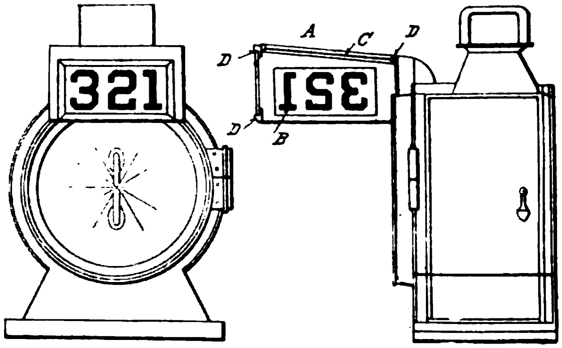
A discovery that may prove of great importance has been made by Sir Purcell Taylor, Bart. He has discovered that the agencies which cause the formation of crystals are twofold, and that the principles which govern the forms of crystals are also twofold.

The matter would require too much space, and would be altogether too abstruse for us to deal with it here *in extenso;* but, in a word, it may be said that the new discovery entirely controverts the commonly accepted ideas of the formation of crystals.

In the first place, it was supposed that crystals were formed only when liquids were perfectly quiet and at rest; but it has now been discovered that crystals are the result of a rhythmic motion taking place among the ultimate molecules of the substance, and that crystals may be formed under these circumstances in liquids, solids and gases.

This discovery explains the crystallization of metals that takes place in engineering structures, and which frequently results in the breaking of bridges, railway axles and the tunnel and propeller shafts of steamships. In the latter connection, it is curious that Sir Purcell Taylor should have invented, some twenty-five years ago, the built-up crankshaft for steamers, which has almost entirely done away with the constant breakage of crankshafts, and should now have discovered, indirectly, the cause of the continual breakage of the propeller shafting.

The discovery points also to the existence of a fourth state of matter beyond that of gas.—American Machinist.



Illuminated Number Headlight Hood

Illuminated Number Headlight Hood.

The Missouri, Kansas and Texas Railway has in successful use on its northern division an illuminated number headlight hood, and which is said to be highly favored by its engineers. In the illustrations, Fig. 1 is a front view of the hood as attached to the locomotive headlight case, and Fig. 2 is a sectional view of the same. A mirror is fitted in the top of the hood, by means of which the headlight rays are concentrated on the numbers, making them plainly visible for a good distance. Where oil or gas is used as an illuminant the numbers are said to be visible for 200 to 300 feet, while with electric light the numbers can be seen for 150 feet. In Fig. 2, *A* shows the hood in section; *B*, the opening for the numbers; *C*, the mirror in the top of the hood for reflecting the headlight rays, and *D*, a molding for keeping the numbers and mirror in position. In addition to the advantages derived from having the number of the locomotive plainly visible, the light is said to be improved by the use of this device.

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West Seneca Tests, Westinghouse Air Brake Co., on New York Central-Lake Shore Lines.

To demonstrate the results attained by the Westinghouse Air Brake Company in its effort to provide brakes and draft gear fully adequate for service under modern conditions, and to perfect other new devices which are no less important from an economical and operating standpoint, tests were made under the auspices of the Lake Shore and Michigan Southern Railway-New York Central Lines at West Seneca, N. Y., August 23, 1905. From a pamphlet recently issued by the Westinghouse Air Brake Company the following is taken:

Quick-Service Triple.—To meet modern conditions referred to in the introduction it was realized that it was necessary to quicken the service application of the brakes on long trains, and this has been accomplished by the introduction of the quick-service feature of the improved valve, making it possible to obtain service application of the brakes on the rear of an 80 to 100-car train in approximately the same space of time as was formerly accomplished by the standard valve on a 20 to 30-car train. With the improved valve, on long trains a five-pound reduction is equal in efficiency to a twenty-pound reduction of air with the old type of valve, thereby making it possible to apply a greater number of brakes in the train with the new than was possible with the old. The quick-service application, as explained, with the new triple valve enables approximately an equal cylinder pressure on all cars, regardless of length of train—hence the ability to make much shorter stops, tending towards decreasing the number of slid wheels by avoiding the increased retardation produced by the excessive pressure on the head of the train, as compared with the old valves.

In the design of the new valve a retarding feature has been provided which more fully puts the movement of the train under the control of the engineer, enabling him to release the brakes on the rear cars of a long train first, if desired, thereby permitting the running-in of the slack, avoiding jerking and lurching of the train from rear, which ofttimes results disastrously; or, if desired, on account of different road conditions, release can be made from the first car towards the rear, keeping the train stretched; or, if conditions are favorable to simultaneous releasing, this can also be accomplished by the proper manipulation on the part of the engineer.

The modifications in the new valve necessary to accomplish the foregoing can be made to the present standard valve, thereby saving the triple-valve shell, casing, and all connections, insuring the continuation of the present standard and at the same time making it possible to obtain the benefits heretofore enumerated, by changing from the old to the new type of triple valve.

Improved Engine and Tender Brake Equipment.—The same changed conditions as explained with reference to the triple valve have emphasized the importance and necessity of modifying engine and tender brake equipment to meet such conditions.

In providing the modifications necessary to meet these conditions, the importance of adhering to existing standards was kept well in view, so that the modified features in the new improved engine and tender equipment can be embodied by very slight change of standard. The essential improvements consist of an appliance that enables the engineer to more uniformly control the brakes on long trains and also provides a straight-air or automatic feature for the independent locomotive and tender brake operation which works in unison with the automatic train brakes, if desired, or gives an independent graduated straight-air action by a very simple manipulation of the engineer's brake valve.

By the function of what is known as the distributing valve, the pressure in the cylinder of the locomotive and tender brake is automatically maintained. In other words, when once applied with the new apparatus, the pressure is constant so long as pressure exists in the main reservoir, and can only be released by the manipulation of the handle of the engineer's brake valve.

By the use of the new engine apparatus a more rapid recharging of the brake-pipe can be accomplished with either the new or old type of triple valve, lessening the time for recharging the brakes.

Friction Draft Gear.—A device that will absorb the enormous shocks incident to the coupling of high-capacity rigid-underframe cars has become a positive necessity. The following are some of the advantages to be derived from such an appliance:

It provides for an easy buffing effect, lessening materially the strain on different parts of the cars; also provides a very much higher resistance and entirely eliminates recoil. Owing to the soft absorbing effect produced by instant jerks or buffs, or break-in-twos, broken knuckles, broken drawbars, broken pins, broken drawbar attachments and other kindred complaints, are almost entirely eliminated, resulting in consequent saving in time and cost of transportation, material reduction in car maintenance, and practically an elimination of draft gear maintenance.

Automatic Air Coupler.—The automatic air coupler provides an arrangement by which the brake-pipe is coupled automatically by impact, so adjusted as to make the coupling positive without necessity of hand adjustment, thereby avoiding the necessity of trainmen or others going between the cars. It is a well established fact that the greatest amount of damage done to the air-brake equipment on freight cars is caused by uncoupling the cars without disconnecting the hose. While calculated to uncouple automatically, the pressure required to separate the present standard is ofttimes so great that more or less damage is invariably done to the brake pipes, producing serious leaks and seriously fracturing.

if not entirely destroying, the hose, thereby shortening the period of service.

Last, but not least, it eliminates entirely the dangers incident to trainmen and others coupling the hose connections by hand, all of which is, under the most favorable conditions, more or less hazardous.

Automatic Slack Adjuster.—The automatic slack adjuster insures uniform piston travel, the importance of which is second to none, especially in the handling of heavy freight and passenger equipment, so as to distribute equally throughout the train an even braking power, thereby making it possible for each and every car in the train to do its share of retardation. As a matter of economy, it saves the expense of maintaining piston travel by hand and helps to eliminate one of the causes of break-in-twos and slid wheels. Last, but not least, consequent delays to trains, ofttimes after they have been made up, for the purpose of hand adjustment of the piston travel, are avoided, thereby eliminating overtime and congestion.

Triple Valve Tests.

(In all tests the dynamometer car was the twenty-sixth in the train.)

Test No. 1.—Standard (old style) triple valves. Speed, twenty miles per hour. Reduction, twenty pounds. Brake-pipe reduction, 20 lbs. Speed, 21½ miles p. h. Length of stop, 557' 9". Length of stop reduced to 22 m. p. h., 584' 0". Duration of stop, 25 seconds.

Note.—Runs 1 and 2, covering Test 1, were not counted, owing to the improper action of the equalizing piston in the brake valve.

Test No. 1-A.—Repeat Test No. 1 with 5-pound reduction. Brake-pipe reduction, 5 lbs. Speed, 22¼ m. p. h. Length of stop, 1312' 10" (see note). Length of stop reduced to 22 m. p. h., 1283' 6". Duration of stop, 57 seconds.

Note.—In announcing the tests at the time they were made it was announced that this was 1613' 10". The record given above is the correct one.

Test No. 2.—Quick-service (improved) triple valve. Speed, twenty miles per hour. (Same as Test No. 1.) Reduction, five pounds. Brake-pipe reduction, 5½ lbs. Speed, 22¼ m. p. h. Length of stop, 456' 2". Length of stop reduced to 22 m. p. h., 446'. Duration of stop, 20.2 seconds.

Purpose of Tests Nos. 1 and 2 is to show that practically the same length of stop is obtained with a five-pound reduction with new triple valves as with a twenty-pound reduction with old triples, thereby making it possible to operate positively a train with a much larger number of brakes in operation, when equipped with new valves, than can be done successfully with old-style valves, which fact has been demonstrated with 100-car train test—the brakes working throughout with new style valves.

Test No. 3.—Quick-service (improved) triples. Speed, twenty miles per hour. (Same as Test No. 1.) Reduction, seventeen pounds (equalization). Brake-pipe reduction, 17 lbs. Speed, 22 m. p. h. Length of stop, 382'. Length of stop reduced to 22 m. p. h., 382'. Duration of stop, 16.4 seconds.

Please note that equalization with the new triples requires only seventeen pounds reduction, while old triples require twenty. Test No. 3, when compared with No. 1, will show lengths of stop obtainable by the two different types of triples when the brake cylinder and auxiliary pressures are equalized.

Test No. 4.—Standard (old style) triples. Speed, twenty miles per hour. Reduction, ten pounds. Brake-pipe reduction, 10 lbs. Speed in m. p. h., 22¼. Length of stop, 774' 6". Length of stop reduced to 22 m. p. h., 757' 3". Duration of stop, 33.6 seconds.

Test No. 5.—Triples arranged, twenty-five standard (old style), twenty-five quick-service (improved), alternating in groups of five. Speed, twenty miles per hour. Reduction, ten pounds. Brake-pipe reduction, 10 lbs. Speed in m. p. h., 22¾. Length of stop, 538' 0". Length of stop reduced to speed of 22 m. p. h., 503'. Duration of stop, 23.2 seconds.

Tests Nos. 4 and 5 will show, (1) that both triples work in harmony, (2) that shorter stops are obtained practically in proportion to the number of new triple valves introduced.

Test No. 6.—Twenty-five standard (old style) triples ahead, and twenty-five quick service (improved) triples behind. Speed, twenty miles per hour. Reduction, twenty pounds. Brake-pipe reduction, 20 lbs. Speed in m. p. h., 21¾. Length of stop, 469' 5". Length of stop reduced to speed of 22 m. p. h., 491' 0". Duration of stop, 20 seconds. The maximum drawbar tension during this test was 18,000 lbs.

This test probably represents worst possible combination of old and new triples, proving that the jerk due to the latter being in the rear is but slight.

Release Tests.

Test No. 7.—Standard (old style) triples. Speed, thirty miles per hour. Reduction, twenty pounds. Brakes released at slow speed and full head of steam at once applied to keep train in motion. Maximum drawbar pull due to release and use of steam was 169,000 pounds. This test resulted in breaking the knuckle on the rear of the nineteenth car. Brakepipe reduction, 20 pounds. Speed in miles per hour, 30.9. Release made at 12½ miles per hour.

Test No. 8.—Quick-service (improved) triples. Speed, thirty miles per hour. Reduction, five pounds. Brakes released at slow speed, as in Test No. 7. Maximum drawbar pull due to release of the brakes and use of steam, 34,000 pounds. No damage whatever resulted in the train. Brakepipe reduction, five pounds. Speed, 31½ miles per hour. Release made at 15 miles per hour.

The purpose of Tests Nos. 7 and 8 is to show that the releasing at slow speed, which causes so many break-in-twos with the standard apparatus, is practically rendered harmless with the improved type of triple valve. The retardation of train with a reduction of five pounds is greater than obtained with a twenty-pound reduction using the standard valves. This is shown to be so by the Triple Valve Tests, see results of Tests 1 and 1-A, also by accompanying curve.

With the improved triple valves the action of valves in retarding the release will stall the train and prevent damage, even when steam is used, if an attempt is made to release when the speed of the train is very low.

Test No. 9.—Standard (old style) triples. Speed, thirty miles per hour. Reduction, 10 pounds. Brakes released at slow speed and steam applied to keep train in motion. Maximum draw-bar pull, due to the release of the brakes and to the use of steam, 42,000 pounds. Steam used 15 seconds after release. Speed, 32 miles per hour. Brake-pipe reduction, 10 pounds. Train was kept in motion by use of steam. Brakes released at 15½ m. p. h. Minimum speed, 6½ m. p. h.

Test No. 10.—Test No. 9 was repeated with quick-service (improved) triples. The maximum drawbar pull, due to the release of the brakes and to the use of steam, 45,000 pounds. Steam used 7 seconds after release. Speed in miles per hour, 33. Brake-pipe reduction, 10 pounds. Brakes released at 16.1 m. p. h. Minimum speed, 4 m. p. h. Train kept in motion by use of steam.

The twenty-pound reduction with the old and the five-pounds with the new valves was made to see the comparative results that would be obtained with reductions that would give, as nearly as possible, the same comparative stop. The ten-pound reduction shows the greatest reduction that could be made with the new valves, with this train, and at a speed of no faster than 33 miles per hour, followed by a release at a speed as low as 10 m. p. h. With a heavier reduction the train would have been brought to rest before it could have been possible to have accomplished a release.

Purpose of Tests Nos. 9 and 10 same as that of Nos. 7 and 8: To show effect produced by making a release and using steam at slow speed; also to demonstrate with equal reductions a much shorter stop than can be made with new valves.

Owing to greater retardation, release with improved valves must be at higher speeds than with old valves to keep train in motion; see Tests 9 and 10.

Friction Draft Gear Tests.

Test No. 11.—Train backing at speed of eight miles per hour, engine reversed and full head of steam applied. This test was designed to represent usual yard conditions. Speed, 7½ miles per hour. Maximum jerk, 95,000 pounds. No damage resulted.

Test No. 12.—With slack bunched and reverse lever in back position, lever suddenly thrown ahead and full head of steam applied. Maximum jerk, 98,000 pounds. No damage resulted.

Test No. 13.—With ten rear brakes fully applied and slack bunched, reverse lever thrown ahead and full throttle used. This test was intended to demonstrate the ability of the friction draft gear to absorb heavy shocks and strains. Maximum jerk, 118,000 pounds. No damage resulted.

Test No. 14.—At speed of fifteen miles per hour, emergency application applied from the rear car, engine working under full head of steam throughout the test. This test was intended to represent conditions existing when hose bursts on rear of train. Speed at time of brake application, 23½ miles per hour. Maximum tension, 87,000 pounds. This came in the shape of a hard, steady pull, no jerk. No damage resulted.

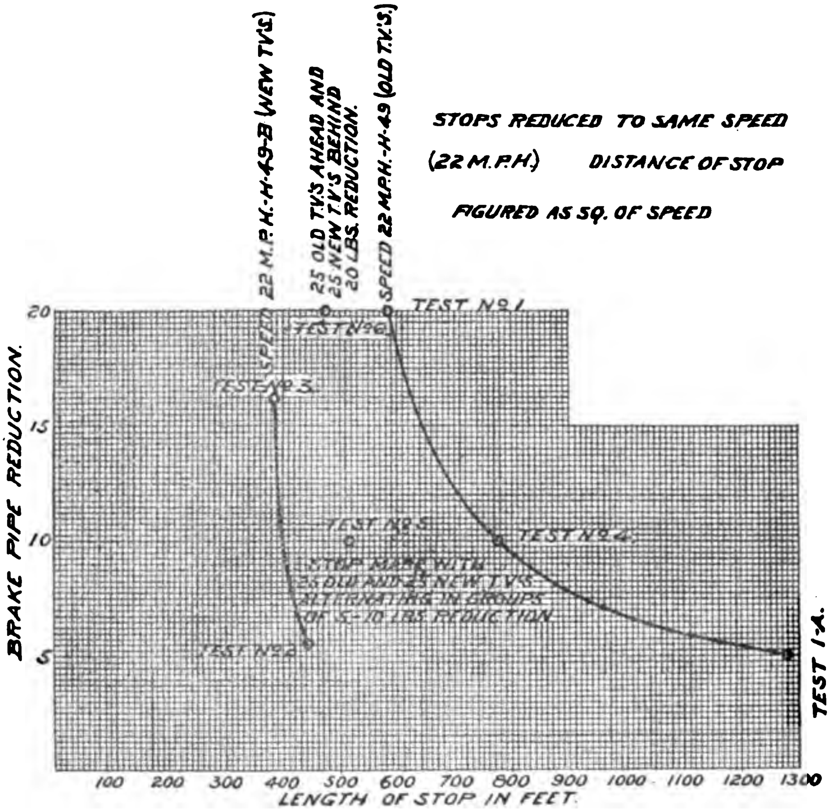
Test No. 15.—Train separated at tenth

and fifteenth cars; forward section backed into second, and without stopping, into rear portion at a speed of from four to six miles per hour. Maximum buff, 0 pounds. Speed indicated by speed recorder on engine, four miles per hour. No speed record on dynamometer car, as it was at rest during this test. Shock had died out by the time it had reached the dynamometer car, which was the 25th in the train. No damage resulted.

Test No. 16.—Duplicating Test No. 15 at speed of from six to eight miles per hour. Maximum buff, 42,000 pounds. Speed, six miles per hour by indicator on engine. No dynamometer car record, as car was at rest. No damage resulted. This test shows the value of the friction draft gear in absorbing shocks; also the absence of recoil.

Test No. 17.—Duplicating Test No. 15 at speed of from eight to ten miles per hour. Maximum buff, 100,000 pounds. Speed by recorder on engine, eight miles per hour. No record made of speed on dynamometer car. No damage resulted. Another example of the dissipation of energy and absence of recoil in the friction draft gear.

Test No. 18.—With all cars from tenth to twentieth uncoupled, test made to determine time necessary to couple up both couplers and hose connections, release brakes and move train. One brakeman employed during this trial. This test intended to illustrate the saving in time obtained by use of the automatic air hose couplers. Time necessary in which to cut in the air, after car couplings had been made, 42 seconds. A similar test made with ordinary hose and couplings showed that the corresponding time to couple hose and turn angle cocks was 2 minutes and 2 seconds.



West Seneca Tests, Westinghouse Air Brake Co., New York Central-Lake Shore Lines

Extra Tests.

Extra No. 1.—Emergency application of the brakes from the engine. 100 per cent. of air cars cut in. Triple valves used, improved. Speed, 33¾ miles per hour. Stop in feet, 506.6. Duration of stop, 14.8 seconds. Maximum buff, 41,000 pounds. Maximum tension, 41,000 pounds. No damage.

Extra No. 2.—Emergency application of the brakes from the engine. 100 per cent. of air coupled up. Triple valves used, improved. Speed, 6½ miles per hour. Stop in feet, 14.3. Duration of stop, 3.4 seconds. Maximum buff, 104,000 pounds. Maximum tension, 0 pounds. No damage.

Extra No. 3.—Emergency application of the brakes from the engine. 50 per cent. air cars coupled up. Triple valves used, improved. Speed, 10 miles per hour. Stop in feet, 49.6. Duration of stop, 6.4 seconds. Maximum buff, 345,000 pounds. Maximum tension or recoil, 0 pounds.

Extra No. 4.—Buffing and coupling test. Cut made back of the twenty-ninth car and front portion backed into rear portion. Speed, 6 miles per hour. Maximum buff, 172,000 pounds. Tension or recoil, 0 pounds. No damage.

Extra No. 5.—Buffing and coupling test. Train cut at the twenty-fourth car and front backed into rear portion. Speed 8 miles per hour. Maximum buff, 430,000 pounds. Maximum tension or recoil, 0 pounds. No damage. All of these buffing tests showed conclusively the capacity of the friction draft gear to absorb shocks and stand punishment; also that practically all recoil is eliminated.

Triple Valve Tests—Graphical Records.

The diagram herewith represents graphically the results of the triple valve tests of August 23d, and, for convenience of comparison, all of these stops have been reduced to comparative speeds.

Distances were reduced to comparative stops at 22 miles an hour, and from the records of the tests it will be seen that the comparative runs shown were actually very close to this speed.

The tests proved conclusively the following:

That a five-pound reduction with the new triple valves will stop a 50-car train in 76 per cent. of the distance required by a 20-pound reduction with the valves at present in use.

Comparing the five-pound reductions, the new valves will stop the train from the same speed in 34¾ per cent. of the distance required by the old valves.

With trains of mixed valves the benefits derived are in proportion to the number of new valves in the train.

That the old and new valves scattered throughout the train operate in perfect harmony and with increased advantages.

It is possible to release the brakes at low speeds, with trains equipped with new triple valves, without damage to draft gear.

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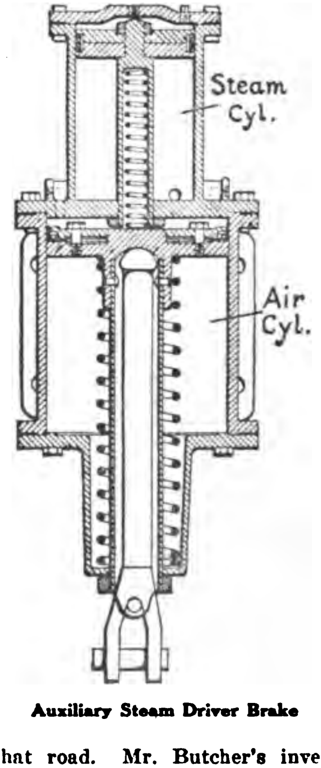
Auxiliary Steam Driver Brake.

An auxiliary steam driver brake attachment, designed and patented by Mr. G. W. Butcher, superintendent of motive power and machinery of the San Antonio and Aransas Pass Railway, is being applied to the locomotives in freight service of that road. Mr. Butcher's invention consists in the addition of a steam cylinder placed tandem to the regular air cylinder of the driver brake, the brake cylinder head being removed and the steam cylinder with its head taking its place. In addition to the steam cylinder, the



Auxiliary Steam Driver Brake

necessary piping and a three-way cock in the cab for the use of the engineer is all that is required.

With this attachment, in case of air pump failure or for holding the brake on while recharging the train line on heavy grades it will be found most valuable. As the steam cylinder can be cut in and used independently of the air brake, holding the brake on as long as steam is admitted to the cylinder, it places an additional safeguard around the men when working beneath the locomotive.

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Book Review.

Modern Locomotive Engineering Handy-Book.—This is the title of a new book by Calvin F. Swingle, M. E., which treats on the construction and management of modern locomotives, both simple and compound, the object being to furnish to locomotive engineers and firemen, in a clear and concise manner, such information as will thoroughly equip them for the responsibilities of their calling. The subject-matter is arranged in such a manner that the fireman just entering upon his apprenticeship may, by beginning with chapter I, learn of his duties as a fireman and then, by closely following the make-up of the book in the succeeding pages, will be able to gain a thorough knowledge of the construction, maintenance and operation of all types of engines.

Breakdowns, and what to do in cases of emergency, are given a conspicuous place in the book, including engine running and all its varied details. Particular attention is also paid to the air brake, including all new and improved devices for the safe handling of trains.

The author in his introduction says: "The young man who starts on his business career by looking for an easy job is not likely to ever have, or at least to hold, any position of great responsibility for a very long period of time. To many unthinking persons the job of locomotive engineer appears to be a soft snap. They do not realize the tremendous responsibility resting upon the shoulders of this man, who, by years of hard work and study combined, has finally succeeded in gaining the knowledge and experience required to enable him to guide his powerful machine safely over its route. It is universally conceded that there is no one machine that has done more towards the civilization and advancement of mankind generally than has the locomotive, and it is a worthy ambition of any young man to aspire to be a locomotive engineer. But if he desires to make a success of it he should remember that there is work to do —lots of it—brain work as well as hand work. * * * A large number of books for enginemen are gotten up in the form of a catechism, the answers immediately following the questions. The author believes that the catechetical form is not so helpful as that of having a list of questions, but no answers, arranged at the close of each chapter. The student is thus constrained to search for the answers, which will always be found in the preceding chapter, and he will thus have the matter more firmly fixed in his mind than he would if he has the answers ready made for him. * * *"

The book contains over 600 pages and is beautifully illustrated with line drawings and half-tone engravings. Plain, simple and explicit language is used throughout the book, making it unquestionably one of the most modern treatises on this subject in print.

Size 5x6¾. Pocket-book style. Full seal grain leather, with gold stampings and gold edges. Price, $3.00. Published by Frederick J. Drake & Co., 211 E. Madison St., Chicago, Ill.

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Western Railroad Activities.*

Building a Second Overland Line.—The Santa Fe people are now building a branch line from Wickenburg, in Arizona, west to Bengal, in the Mojave desert, in California. This line will eventually give the company a second overland line from the east into California, thus affording it an alternative road for through business in case of the interruption of traffic on the present line by way of Needles. About 40 miles of this new road have already been constructed, and building westward continues.

Wickenburg is a point on the Prescott and Phoenix branch of the Santa Fe, while Bengal is on the main line in California west of the Needles. East from Phoenix the company is building a road towards Deming, which is also a point on the Santa Fe system. So eventually, the company will have a line direct from Bengal to Deming, which will develop an entirely new country, as well as serving as another overland line route into California.

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*Special correspondence to the Locomotive Firemen's Magazine by J. Mayne Baltimore.

Reading Rooms for Railroad Men.—The Santa Fe is prepared to spend the sum of $100,000 during the coming year upon the reading rooms of its system. It costs $75,000 annually to maintain these reading rooms, which are practically free clubs for the pleasure and entertainment of its army of employes.

It is understood that other systems are making inquiries into their working with the view of establishing similar reading rooms along their lines.

S. E. Busser is the general superintendent of the Santa Fe rooms. In the course of a conversation he said:

"Our people are going to put in a new reading room in the town of Needles, which will cost the sum of $50,000. This will be an elaborate building, and will have a swimming pool and a plunge. There are to be 35 sleeping rooms, double bowling alleys, billiard rooms, and an auditorium which will have a seating capacity for 600 persons.

"In these reading rooms we have eminent lecturers, and we give entertainments free to all railroad men; and we are liberal to the residents of the towns where they are located. There are 25 of these rooms on the system. On the Pacific Coast they are located at Point Richmond, Barstow, Seligman, and Winslow, Arizona, Gallup in New Mexico, and also at Albuquerque."

Propose to Spend Millions.—The official announcement has just been made by Mr. Julius Krutschnitt, who is the General Director of all the western lines owned and operated by the Harriman system, that several millions will be spent during the next few months in the way of improving the vast system. He said:

"New locomotives have been ordered, the passenger equipment is to be materially increased, fast trains are to be put on the San Pedro, Los Angeles and Salt Lake road, heavier rails are to be put in, the double-tracking of a greater portion of the Union Pacific has been ordered, and there is considerable double-tracking to be done in California.

"It may be stated that Mr. Harriman has been strengthening the equipment of the roads under his control. There have been ordered 140 new locomotives, 6,000 freight cars, 120 coaches and baggage cars, and 8 observation cars, for the new limited to Los Angeles. The new limited to Los Angeles will probably be run on the Coast line, and is to make the trip in 13 hours. There will also be a fast train over the San Pedro, Los Angeles and Salt Lake in connection with the Union Pacific, and some of the observation cars and diners will be put on this run.

"We have purchased rails galore, at least 100,000 tons having been recently bought, and one-half of that amount is 90-pound rails instead of the regulation 80 pounds.

"There is nothing new as to the project of the great tunnel through the Sierra Mountains. It is simply a question of economy. We are not yet decided whether the business of the Central Pacific will warrant us engaging in the building of this tunnel—at least for the present. Still, we have our engineers at work and they are figuring on the cost and the cutting off of corners.

"It can be stated that we have been perfecting our block system, and that we have it in operation as far as Reno. It is safe to say that in the course of two years there will be a complete block signal from Ogden to Omaha.

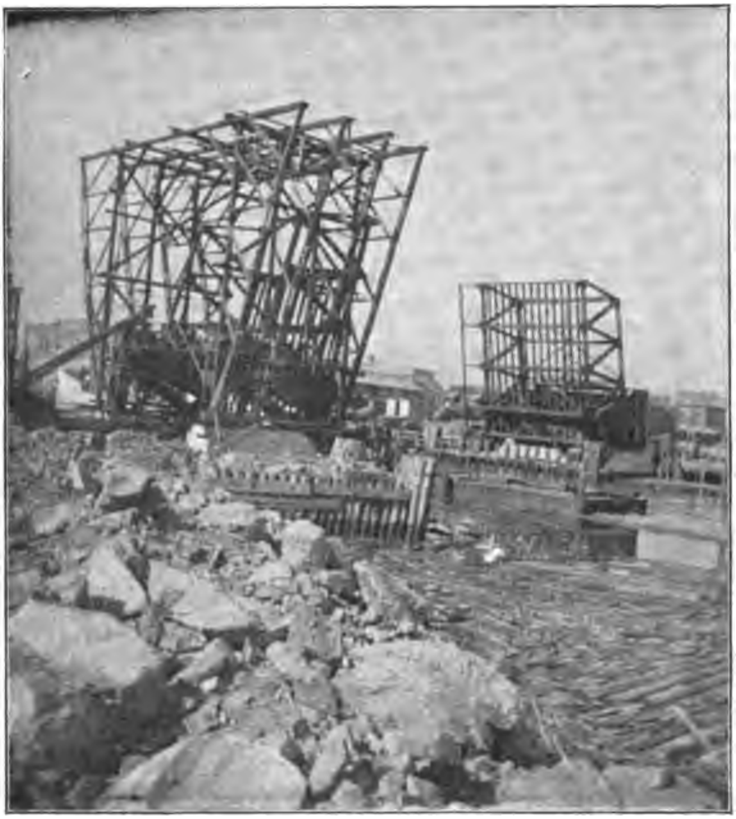
"It is Mr. Harriman's intention to double-track some 100 miles of the Union Pacific, and there will be a good deal of double-tracking in California, especially between Benecia and Sacramento. There will also be many other improvements of less importance than those already mentioned. These works will cost several million dollars."

New Railroad Bridge at San Francisco.—The first uplift bridge—known as the "Basco bridge"—to be constructed west of the Missouri River is now nearing completion at San Francisco, Cal. It is principally a railroad bridge and spans a long narrow arm of San Francisco Bay. This arm is generally called a "creek," though it is tidewater.

The stream lies just north of those two giant fills—China Basin and Mission Bay—and separates them from the Southern Pacific's passenger depot and the Santa Fe's present freight depot. The construction of a bridge across this narrow stretch of bay has long been necessary Work was commenced several months ago, and the structure is rapidly approaching completion.

The cost of the bridge, aggregating about $80,000, is borne jointly by the Santa Fe and Southern Pacific companies, the former paying two-thirds of the cost and the latter one-third. Both are entitled to the use of the bridge on the basis of that proportion. As the city gives the use of a part of Second Street to the railroads, the municipal corporation reserves the right to also use the bridge for teams and pedestrians.

The bridge is composed of very heavy structural steel, and the opposite abutments are of very massive concrete, reinforced according to the Weber method. Each span is about 50 feet long, the ends of the sections meeting in the middle of the stream when down. The distance between the abutments is 100 feet. The bridge is claimed to be an improvement over those built elsewhere. The weight of each span is so adjusted that it nearly balances, and can be raised and lowered easily and rapidly. It is more than 30 feet wide in the clear, and will be double-tracked. When completed and thrown open to traffic, this bridge will be the center of one of the most active and bustling scenes in the world. The railroad traffic to and fro will be enormous, to say nothing of teaming, trucking, and foot passengers. Then, the shipping along even this narrow tide arm is immense. On an average more than 125 vessels will pass the point where the bridge stands—which is near the entrance—each day. It promises to be the most "congested" locality in San Francisco.



RAILROAD BRIDGE AT SAN FRANCISCO—PRESENT STAGE OF THE WORK

Including the approach from the northern end, the bridge will be about 350 feet long. The southern end abuts on the lower limits of China Basin. Over the approaches the Southern Pacific has secured trackage rights. This new bridge will very greatly facilitate the railroad business of the two companies.

Trains Running on the Docks.—San Francisco is very soon to have trains running on two of her great docks. This will dispense with the much slower method of loading and unloading vessels by means of teaming, trucking, etc. This is the first time in the history of California that trains will run alongside of great steamships to receive or discharge their loads.

The two immense wharves that are now being constructed at San Francisco are among the largest ever built on the Pacific Coast at any time. These mammoth piers are being built by the State of California, and are for the use of the Pacific Mail Steamship Company. That company has already leased these two immense piers for a term of three years, paying therefor the sum of $85,000 in round numbers. They will doubtless lease them for a much longer term on the expiration of the present lease. Each of these piers is 840 feet long and 132 feet wide. They are separated by a slip 840 feet long and 200 feet wide. This slip is long and wide enough to admit two of the largest vessels in the world to lie side by side along each pier and receive or discharge cargo at the same time.

The giant piers are supported by huge cylinders composed of concrete. Under each pier are 576 of these pillars—or 1,152 supports in all. The cylinders are arranged in rows or bents extending across the narrow way of each pier. In each row are 13 cylinders—five of which are 5 feet in diameter, and eight 4 feet in diameter. These pillars vary in length from 24 feet to 60 feet—the shorter ones being near the shore and lengthening as the pier extends outward.

The huge cylinders are all of concrete inclosed in a wooden casement perfectly round. This casement is built like an immensely long barrel—of uniform size from end to end. It is built in a "cradle," and fastened very firmly together by means of strong iron bands tightened with screws. These hoops are placed several feet apart. Wherever a smaller cylinder is placed, three piles are driven together in a cluster; where a larger cylinder is placed four piles are driven. These piles are sawed off just level with the water at mean tide.

The great cylinder is hoisted and lowered over the piles and after being firmly set down in the bottom is pumped out. Then the space is filled with soft concrete, which is tamped down until it is firmly "fixed." Then it is left to harden. Not only are these pillars capable of supporting an enormous weight, but they will last indefinitely, and, better still, are positively toredo proof—those most destructive borers of all wooden piles.

Huge structural steel girders are placed across the tops of the stone pillars and on these the superstructure is built. As they stand, these piers are very massive, and can bear up safely all the heavy merchandise that may be heaped upon them. On the western pier, a two-story building will be erected, and on the eastern, a one-story building will be put up. To cover these two immense buildings it is estimated that 110,400 shingles will be required.

Each pier will have a double railroad track running the entire length, so that cargoes will be transferred from steamer to cars, or from trains to steamer direct and thus dispense with all teaming, trucking, etc. Work has been in progress for many months already, and these great piers will not be completed for some time. As all the water front of San Francisco belongs to the State, this immense dock improvement is being made by the commonwealth of California. The total cost of these new docks will approximate $600,000. As the Pacific Mail Steamship Company own 16 large vessels, they require immense docking facilities, and the new docks will greatly relieve the congested condition of affairs.

Important Report on Fuel Oil.—Stephen Wren, the General Foreman of the Southern Pacific shops in Sacramento, Cal., has just submitted a report to the company on the economies effected by the use of fuel oil in those shops that are attracting wide attention among railroad men in particular, and manufacturers in general all over the country. Mr. Wren says it takes 40 cents' worth of fuel oil to heat one ton of metal to the welding point, as compared with 500 pounds of bituminous coal costing $1.25. This saving is 68 per cent. in the cost of fuel alone.

Again, his report shows it costs $12 a day—six men at $2 a day—to carry coal from the pit to the furnaces, while one man can distribute oil over the whole works. Another is the hauling away of the ashes and cinders daily produced by the coal; also, the work of a fireman and the great wear and tear on the brick work in the fire chamber where the coal is used. All of this hard labor is reduced 75 per cent. by the use of oil. Furthermore, the output of a furnace heated with oil is at least 20 per cent. more than the old-fashioned coal furnace.

Foreman Wren also says the most important question relative to the two fuels is the quality of the iron produced from the scrap material, and he has come to the conclusion that hammered iron for railroad appliances, such as for locomotive forgings, or for any other purpose where the metal is subject to compression or tensile vibrating and torsional strains, when produced from fuel oil is far superior to meet those conditions than similar metal produced from coal.

In his opinion oil at 6 cents a gallon and coal at $5 a ton about balance, as far as the cost of the two fuels is concerned, while the improvement of the quality of the iron produced by heating with oil instead of coal is incalculable.

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Reporting Locomotive Defects.

"No steam, right injector not working, pound on the right side, bad coal." Such reports as these are often made by enginemen.

It is impossible to keep locomotives up to proper condition with reports of this character, because roundhouse forces are not given sufficient information to correct the difficulties. When an engine is cold in the roundhouse it is impossible for the men to discover the exact cause of the trouble, and in many cases the necessary work is not done.

Many motive power officials complain of the indefiniteness of the reports of enginemen, and they say it has grown worse with the increase of pooling. Undoubtedly if the men realized the importance of it they would be more explicit in their statements. On some roads such reports are not permitted, the men being required to know where the pound occurs, what the trouble with the injector is, and why the engine does not steam, or if they can not tell positively they are required to give an intelligent opinion.

It is not unreasonable to expect an engineer to know quite definitely what is wrong, and where such difficulties occur it seems fair to predict that great good would result from closer relations between the traveling engineer and the men. Would the owner of a $20,000 horse accept from his driver a statement that the animal was lame, or otherwise not right? He would certainly be justified in expecting the man to take sufficient interest in his charge to know where he was lame or what was wrong. It can not be believed that the men who are entrusted with modern locomotives are not capable of satisfactory diagnosis.

"Poor coal" is generally accepted as a reason for engine failures on most roads. There seems to be some mystic power in these two words. With proper management of the fire, "poor coal" should never lead to an engine failure. Are the locomotives designed for the coal they must use? Do the firemen receive the amount of instruction in the use of fuel that the importance of their work requires? Does the engineer feel sufficiently responsible for or interested in the work of his fireman to give him the benefit of his experience? Anything which will increase the interest of the men in their work will help these matters along wonderfully. In Europe premiums to the engineer and fireman have accomplished wonders in these directions.—American Engineer and Railway Journal.

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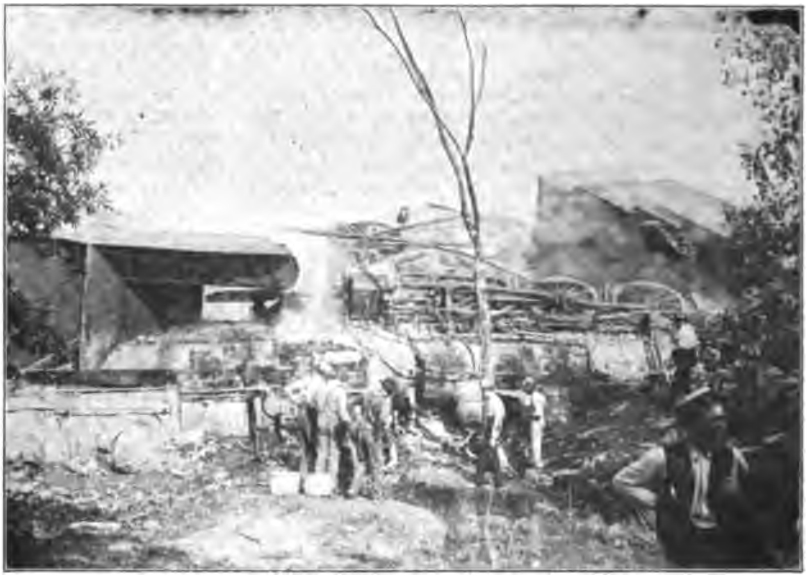
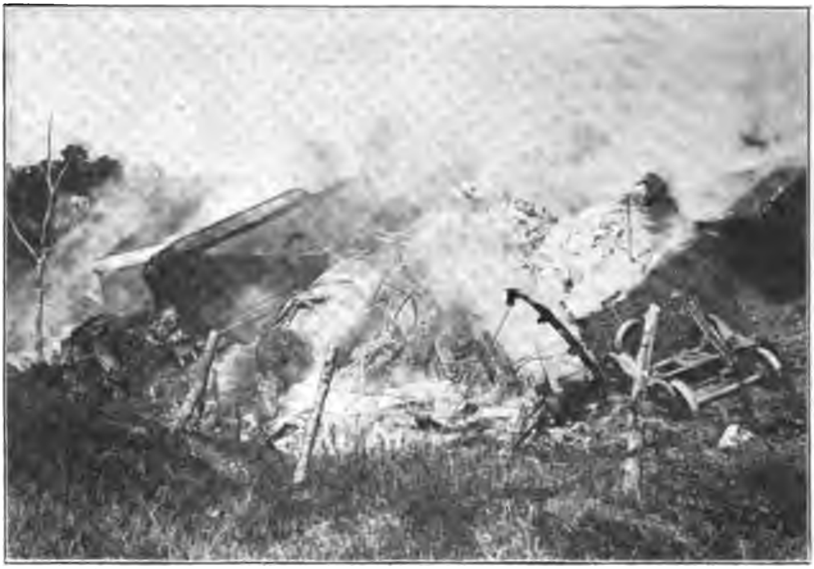
Front End Tests to be Continued.

The experimental locomotive of Purdue University, Schenectady No. 2, which has recently served in an important study designed to determine the value of very high steam pressure, is to be sent to the Schenectady works of the American Locomotive Company early in November for the purpose of being fitted with a Cole superheater. It is expected that the engine will be returned with its new equipment early in January. During the absence of Schenectady No. 2 from the testing plant, a New York Central Atlantic type engine is to be installed upon the plant for use under the direction of the Master Mechanics' committee on Front Ends. It is the purpose of this committee to repeat upon an engine of large size the experiments made under the patronage of the American Engineer upon Schenectady No. 2, for the purpose of determining the constants in such equations as may be necessary to the logical design of all portions of the front-end mechanism. The master mechanics' committee having the matter in charge consists of Mr. H. H. Vaughan, S. M. P., C. P. Ry., chairman; Mr. F. H. Clark, G. S. M. P., C., B. & Q. R. R.; Mr. Robert Quayle, S. M. P. and M., C. & N. W. Ry.; Mr. A. W. Gibbs, G. S. M. P., P. R. R.; Mr. W. F. M. Goss, Purdue University; Mr. G. M. Basford, American Locomotive Company.—The Railway and Engineering Review.





WRECK ON IOWA CENTRAL RAILROAD, JULY 14, 1905, NEAR RICHLAND, IOWA

Wreck on the Iowa Central Railroad.

The illustrations herewith are of a wreck which occurred July 14, 1905, near Richland, Iowa, on the Iowa Central Railroad. Engines 105 and 106 were double-heading on train 93 and left the track on the approach of a bridge, killing the engineers, Bro. C. K. Williams of Division 146 B. of L. E., and J. V. Long, the fireman on one of the engines, Bro. Wm. F. West of Lodge 560 B. of L. F., and one brakeman, Bro. S. Woolsey of Lodge 152 B. of R. T.

WRECK ON IOWA CENTRAL RAILROAD, JULY 14, 1905, NEAR RICHLAND, IOWA

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*The Salton Sink.**

The Salton Sink, where sterile water and barren soil unite to create a desolation without a peer on the planet, is at present going through a transformation that renders even a desert worthy of a moment's notice. In some archaic time the Colorado River walled up the northwest end of the Gulf of California with sediment, leaving an inland salt lake which, being located in an almost rainless region, promptly evaporated. In their haste the promoters of the Southern Pacific Railroad built through the territory offering the least resistance, and the dry bed of this forgotten sea gave them an almost level roadbed for over a hundred miles of track, some of it being more than 260 feet below sea level.

Five years ago the California Development Company launched a scheme for the reclamation of a large area of land lying between the Colorado River and the Sink, most of it below sea level, using water from the river for irrigation. The exhaustless fertility of delta soil, cheap water and other allurements soon attracted a large and prosperous population, but the improvements made by the promoters were of the flimsiest nature, the main canal being largely a channel of an old inlet from the river to the Sink, and no head gates were placed at the intake to control their water supply. As a natural consequence of the first high water, a large stream was diverted at the intake, and, as the slope to the Sink is much steeper than the fall of the river bed, the Colorado River abandoned the latter for the former, and the Southern Pacific is doing the only thing possible—moving.

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*By member.

So far the district flooded is the salt-incrusted sea floor, and on account of the large area the rise is only about half an inch daily. All efforts to confine the river to its old channel have been unavailing, and the fear is often expressed that it is now too late to accomplish it, although the engineers in charge state that the flow will be checked by January 1st. It will take about 20 years, at the present rate, to fill the Sink to sea level, and much valuable land (about 2,000,000 acres) will be destroyed.

We ran over the submarine right of way
For a score of unharmed years,
Till we fancied the ocean had vanished to stay
And felt ashamed of our fears;
Then they dug the canal and the "man with the hoe"
Showed what wonderful crops the desert soils grow,
And we laughed at those who said "Better go slow,"
And silenced them with our jeers.

Through ages the cacti had reared their heads
Where once was a sea-beaten shore,
The side-winder crawled where the oyster beds
Had dotted the ocean's floor:
The sand dunes had drifted where once the wild waves
Made sport of the kings of men and their slaves,
And the coyote skulked in the mermaid's caves
And snarled at the jewels she wore.

But the river kept raising its channels of silt
Till at last in a torrent of rain
He burst through the headings the ranchers had built
And down the canal to the plain
It swept, taking bridges and barns as it went,
And we found when the force of the storm's strength was spent
That the river's whole current flowed down through the rent
And Salton was flooded again.

The coolies and Japs are removing the track
As the waters come stealing on;
But long before they were done
The tawny waves swept o'er the old right of way,
Scorning the rip-rap in their wild play,
And still keeps rising a half inch a day,
For the ocean is claiming its own.

The desert, treeless, lifeless, hopeless, is here seen in the superlative degree of its desolate perfection; but even here I must confess that the desert has always held for me a kind of vague allurement that is real, though difficult to define or explain. There is no beauty on earth so chaste, so pure, so stately, as the beauty of the tranquil desert. There is a lofty dignity in her naked mountains, where peace has settled with an eternal silence; there is a generosity in her broad plains and empty valleys; a sweetness in the breath of her breeze and the smile of her azure skies; a glamour in her radiant sunset, and a splendor in her starlit nights; but there is no treason on earth so base as the treachery of the desert, no hatred so vindictive or so patient. She lures with the song of the siren, but strikes with the venom of the adder, and without warning. There is no anger on earth so terrible as the fury of the desert when her storm-lashed sands are hurled through the air, and she sweeps through her realm in the rage of her darker passions. There is no punishment on earth so horrible as that meted by the desert to her unfortunate victims. They who die by burning, freezing, starvation, or drowning, or from natural causes, are almost invariably benumbed to much of the physical pain, but the desert curses her victim with hallucinations that intensify his agony, spreading before him a near but ever receding vision of refreshing shade and cooling water, maddening his defenseless brain with a merciless heat till he staggers on through a chaos of pain to the inevitable end.

In spite of this, or possibly on account of it, there is a keen delight to many in fighting the desert; in making a verdant spot out of waste, putting water where there is no water, building homes where man never dwelt, in forcing nature through sheer shame of her own sterility into useful production, and to those who know how to conquer her the desert yields a bounteous harvest to both rancher and miner; but always just beyond the head-ditch, just outside the fields, with an implacable malignity, an eternal patience, sits the desert, silent, unconquered, waiting for revenge on those who have disturbed her peace; and when her opportunity comes she strikes such a blow that the terrified rancher often gathers his meager belongings together and flies as from a region accursed.

The provisions of the law of compensation are not enforced in the realm of the desert. There is no economy of effort, no conservation of energy; excess is followed by prodigality, waste by extravagance. Nature has neither seed time nor harvest, neither growth nor decay, neither toil nor reward; she uses all her united forces for the destruction of progress, the extinction of life; her perfection is barrenness, her tranquillity is desolation.

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*Engine Equipments.**

The railroad is the skeleton of our civilization; locomotives are the muscles; whatever pertains to the operative efficiency and economy of the locomotive is of interest. This subject of engine equipments is of much interest, for upon the equipment, and its care and use, depends largely the efficiency of locomotive service and often the economy of time and property.

Engine equipments are made up of such items as are included in the following list:

APPURTENANCES.

Grease cups: rods, guides.
Flags: red, white, green, blue, yellow.
  Flag holders or brackets.
  Flag boxes.
Headlight: front, rear.
Lanterns: red, white, green, blue globes.
Lamps: blizzard or classification marker.
  Slides: red, white, green, blue.
  Lamp brackets: front end, pilot, rear tender sides, rear tender center.
Cab lamps: steam gauge, water glass, air gauge, steam heat gauge.
  Brackets for same.
  Guard for water gauge glass.
Boxes: seat, tender.
Fire door chains.
Coal boards: front, side, back.
Push poles or stakes.
Torches.
Cab curtains: back, sides.
Seat box cushions.
Hooks: for clothes, for keys.
Arm rests.
Gauge cock drip trough.
Tank ropes.
Electric cab block signals.

APPLIANCES.

Coal scoops.
Oil cans: engine, valve, headlight and signal. Oil supply cans.
  Engine and valve oilers, long spout, short spout, squirt can.
  Dope pails, tallow pots and covers, grease cup charges.
Fire tools: single or double hook, slice or slash bar, shaker bar, coal pick, hoes long and short, pokers for firebox and for front end.

TOOLS.

Hammers: hard hand, sledge, combination, soft.
Wrenches: Monkey or screw, Stillson or pipe, alligator, double-end set-screw, double-end eccentric set screw, double-end wedge bolt, double-end oil cup, double-end rod, air pump spanner, lubricator spanner, injector spanner, injector knuckle, main rod wrench, crank-pin nut wrench.
Chisels: flat, long cold, cape, round nose, bars.
Sets, punches, files, drifts, scrapers.

SUPPLIES.

Headlight chimneys: glass, mica.
Water glasses, gaskets.
Lubricator glasses, gaskets.
Hose: airbrake, dummy brake, air signal, dummy signal, steam, all couplings (including heater to water scoop), gaskets.
Lamp wicks, wicking.
Waste.
Bell cord.
Brasses, engine truck, tender truck.
Bolts and nuts.
Rod keys.

EMERGENCY.

Replacers or wrecking frogs.
Chain and hook, wrecking or switch.
Jacks: large and journal box, jack levers.
Pinch bars.
Fusees and torpedoes.
Guide blocks.
Main crank pin blocks.
Valve stem clamps.
Medical boxes.
Plugs for cylinder release valve.
Emergency knuckle.
Ax and saw.

MISCELLANEOUS.

Water buckets, brooms, brushes, sponges, sponging irons, water coolers or kegs, drinking cups, tripoli can, time card holder, fuel books, store books, time slips, framed instructions, lubricator, electric headlight, tool list, seal for tool box, lock for same, portable tool boxes.

This list is not comprehensive; it is only representative of actual practice here and there.

How should the engine equipment, made up of such items, be handled? Shall we deal with engines as individuals, or with engine crews? Shall we "standardize" equipment, making it of general uniformity for all engines, all enginemen, all conditions, or shall we vary the equipment to suit each case? Shall our aim be to have the smallest practicable equipment, or shall we make traveling storehouses of our engines in the endeavor to provide for every chance? And, in the end, shall or shall not economy of supplies and supervision be the determining watchword?

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*By R. Emerson in American Engineer and Railroad Journal.

Of course, every operating locomotive in the land carries some equipment—else it could not run. Also, most of our larger roads have made some endeavor to systematize this problem—as is evidenced by printed tool checking lists, and occasional roundhouse tool inspectors; and in one way or another the crews get supplied. But, generally, this detail of railroad operation is overlooked or neglected by the higher officials (general manager and superintendent of motive power), who alone can bring about any lasting good in the matter. At the outset, therefore, if anything is to be accomplished along this line, it must be done on a large scale, on a thorough scale; and in the doing, money (tens of thousands), time (months—a year), must be spent. This once done, actual annual savings in stores and in expense should surely result, with also much greater satisfaction and efficiency of the service.

HOW TO IMPROVE CONDITIONS.

To be most completely worked out, the matter should be in the hands of the superintendent of motive power, who might, however, call in to advantage an advisory committee of, say: mechanical engineer; a master mechanic or roundhouse foreman (usually too busy!); a superintendent; a storekeeper (preferably a man intimately conversant with the conditions of issuing stores to engine crews, who should also in the present case familiarize himself with the annual accounts for the road respecting engine equipment supplies); an engineman (member of engineers' committee?). This committee could not meet as a whole very well oftener than once in a month, and each member could hardly do more than give some attention to the matters affecting his particular interests; its province would be advisory and debative—possibly in most cases decisive; the co-ordaining executive work should be wholly in the charge of some one specially delegated to the task, he to be responsible to the superintendent of motive power, and to consult fully with members of the committee individually, as well as in session. Representing the superintendent of motive power, this man's rank, while carrying out the organization and in respect to it, should be above that of the master mechanics; that is, he should have ample authority to put the work into effect; he might conveniently do this by using the superintendent of motive power's name rather than his own.

What state of affairs will this man (whom we may call equipment inspector) and this committee find? Locomotives running into the dozens of classes, each class having slightly different requirements in equipment (i. e., rod wrench sizes, water-glass lengths), even locomotives of a class often differing; requirements varying also with different kinds of service (freight, passenger, switch), on main line and on branches, on different divisions; pooled engines will be devoid of almost all equipment—what remains being left only because unfit to take away!—assigned engines, on the other hand, having tool-boxes fairly bursting with the greatest assortment of miscellaneous wrenches, fixings, etc.; some engineers (and especially firemen) will be hostile to any attempt at systematization, the more so where responsibility is involved; the roundhouse forces will be too busy to heed anything; and it will be found that the stores on different divisions carry articles for equipment varying in style or quality, that some things are manufactured in shops when they might be bought better and cheaper, or the reverse, that many articles are not the best or most serviceable or suitable (i. e., gauge lamps, or spring valve long oilers), that some things are carried uselessly while other items are lacking though needed, that the printed list is probably perfunctory and doesn't agree with the actual stock or with sundry circular letters of instruction. In other words the whole problem will be vexatious, inconsistent, confusing—apparently hopeless.

The committee named is a very broadly representative one, and not without reason, because this little subject has many deep ramifications. For instance, it is desired to "standardize" all the tool and seat boxes and lockers. Of course, this can be done only after the equipment has been decided upon, so that these boxes may conveniently contain each its proper outfit. It is at once found that the tenders are of all different classes and arrangements, and that it is almost impossible to get any "uniformly standard" method of placing boxes. The best that can be done is to have one, or perhaps two, alternative plans. Similarly attempts to standardize coal boards (for cheapness of manufacture, and convenience of keeping in stock and applying) meet the same difficulties. Locomotive cabs, it will be found, are equally fractious in exacting varying widths, heights or lengths to the boxes put in them. In designing "standard" types of locomotives (such as the Harriman common standard; or the Rock Island standard types), the matter of cab and tender arrangements should be considered by the mechanical engineer, and provision made for using standard equipment.

Again, as fast as certain articles are recognized and adopted as "standard" equipment, a drawing and full description should be made of same, it is then definite, and may be referred to by number. This feature also comes under the mechanical engineer.

Some one suggests a uniform bracket for all classification or signal lights, on cars and cabooses as well as on engines and tenders—suggests furthermore a uniform style of lamp, adaptable instantly to either right or left, and, being composed of white (the cheapest) lenses, changeable by means of colored glass slides or tin blanks to any system of color signals desired. This proposition can not be worked out without the advice and consent of your superintendent.

Before any actual organization is attempted, these matters of standard equipment, and the main plan of the checking and accounting system, should be determined upon, drawings made, quotations and samples asked of the purchasing agent, and orders placed (these orders should be quite aside from the regular monthly requisitions, until the equipment is in service—though, of course, the requisitions should conform to the standard articles, a detail which your equipment inspector should very carefully watch out for, and correct, before the requisitions are sent up for approval). For it does not pay to try one thing, then switch over onto something else, and so add to the confusion at the very start. The preliminary preparation and development of this system may well take from 2 to 4 months or even 6; that is, it may well be this length of time before a single tool is placed on an engine under the new arrangements. But it will be time of gathering information as to tender dimensions. sizes of valve-stems (in service—not on blue-prints), of crank pins, of crank pin nuts, of making inventory of equipment in service, of stock in the stores, of sizing up the facilities for applying equipment on various divisions, of selecting men and familiarizing them with the duties of such equipping, etc.

It will be well if the equipment inspector can spend two or three weeks investigating practice in the roundhouse, on the road, and in the office records, on other railroads. The New York Central, the New Haven, and the Pennsylvania are profitable (and extensive) fields for such study. The time thus spent will be a paying investment, as it insures the best precedents being followed.

ITEMS WHICH SHOULD BE STANDARDIZED.

The following items, if used at all, should each be reduced to one uniform standard over the whole railroad:

Headlights and chimneys, lubricators, air signal hose, air brake hose, passenger; air brake hose, freight; steam hose, all hose and couplings between engine and tender, signal lamps and brackets, gauge lamps and brackets, water glass lamps, bell cording, wrecking chain, pinch bars, fusees (10-minute), torpedoes, valve stem clamps, medical boxes, emergency knuckle, ax, saw, water buckets, brooms, brushes, sponges and irons, water coolers, drinking cups, tripoli can, card holder, portable tool boxes, flags (size and quality), lanterns, fire-door chains, push poles and method of carrying, torches, seat box cushions, hooks, gauge cock drip trough, the various sizes of oil cans, coal picks, hand hammers, combination hammers, soft hammers, each size of screw, Stillson and alligator wrench, each style of chisel, set, punch, file, drift or scraper.

COST OF INSTALLING NEW SYSTEM.

An engine equipment will cost from $20 to $150. A very satisfactory one should be obtained for $50 to $60. The total "life" of this equipment, under first rate management, is estimated at from two to five years; in actual practice, without adequate organization, the "life" is but a few months. I know of a case where the full equipment of an engine was worth $65 complete, excepting the headlight. There were over 1,000 engines on the road. No one of them was completely equipped; most of them had less than one-third of what they should have had. Yet the annual requisitions for engine supplies alone totaled much over $70,000 (it was not practicable to get at records of articles made in shops), or more than the complete cost of an equipment for each engine every year; and even then the engines did not carry more than $20 worth of stuff at one time! The figures should have been about $25,000 for supplies, to which might be added from $10,000 to $15,000 to cover the cost of the inspectors, the "organization." And then the engines should have had each the full $65 equipment, all the time.

For a road of this size it would take nearly a year to work the problem out, and in that year perhaps $50,000 would be spent for *new* equipments, in addition to the current $25,000 (or probably a little more than $25,000 until the organization was completed); and as much as $30,000 might also be spent on "labor" (or "intelligence") or men to place boxes and equipment on engines, make record of and check same. This totals over $100,000 for the first year. The second year is, we have seen, only $40,000. In other words, in two years, spending the same amount that we were spending ($70,000) to secure an average $20 equipment on an engine, we could secure a full, efficient and *economical* organization, have every engine running with an entire complement of supplies, and thereafter, while maintaining the same high standard, secure a net saving of $30,000 per year. I speak not from theory, but from fact, from experience.

Reducing this to terms of one locomotive (and the railroad official may multiply the number of locomotives to get the gross figures) this means that whereas an engine may be running (and the condition is nearly average) with nominally a $65, but actually a $20 equipment, at a yearly cost of $65 to $90 (taking into account engines in shop), under proper management, with an investment cost of $100 to $130 for the first year, the subsequent total annual cost will be only $40 to $50 per engine—a net saving of $25 to $40 each year on an extra investment for one year of $35 to $40.

Were similar results attempted on a smaller scale, over a longer period of time, no doubt commensurate results could be secured. But the slower the time, the smaller the scale, the longer deferred are the savings—the longer continued are the wastes.

I have not space at this time to discuss what should be an ideal equipment to fit average conditions, treating each item separately, together with dimensions, costs, material, etc.; nor can I go into an exposition of the printed forms, method of keeping records of each engine and crew, method of ascertaining daily just what equipment is drawn from store, by whom, and where; I can do no more than give a brief outline of the way in which the problem may be approached, and add thereto a few suggestions. I have already proposed placing the matter in the hands of the superintendent of motive power, the appointment of an advisory committee of some importance, and the delegation of the execution of the plan to an equipment inspector. This individual has studied the essential features of practice on other roads and has made his report to the committee; our committee has at length resolved upon the full standard equipment, the general plan of organization, the latitude to be allowed to the inspector in carrying out the plan; our committee has also made its recommendations to the superintendent of motive power, as to the scale on which it is advisable to plunge into the venture—the "first year" investment in complete equipments, the number and rates of men placed on the various divisions with the special (and in many cases temporary) function of getting the system in operation; and the superintendent of motive power has taken the matter up with the general manager or other superior officer, and obtained his approval and authority for the move. It is as big a matter as that.

METHOD OF INSTALLING NEW SYSTEM.

The equipments, to the tune of $10,000 or $100,000, or more, or less, have arrived, and are in charge of the store department. They have been coming in, wrenches in one lot, oil cans in another, in various consignments for the past six weeks or more. Nothing of those new "standard" equipments has been issued, to be lost track of or misused.

What does our equipment inspector do? He selects two principal points on the main line, on the principal division, and equips the engines operating on the best trains between these two turning points. He has ridden with the engineers of these 2, 4, 8, 12 locomotives, has been friendly with them, has made them interested in the new plan, has (seemingly, at least) listened to their suggestions, perhaps humors a whim or so, has made it plain that they are picked out as first to receive these brand-new equipments as best able to demonstrate the success of the system.

At one of the turning points is a large store. At this point supplies are drawn and placed upon the engine all newly prepared as to boxes, locks, brackets, etc., and full record made of the equipment by a local inspector—one of the two or three or half dozen men who have been collecting data, making inventories, etc., on this very subject for a couple of months previous. He is breaking in an assistant. At the other end is another such inspector, who has received a copy of the equipment list on each engine. So these two men, one at each end of the engines' run, watch like hawks for the appearance of the 2, or the 12, that have been equipped preliminarily, and are prompt to follow up any irregularity in the custody or use of articles upon them. It matters not in this connection whether the tools, etc., be locked in boxes on the engine, and there inspected or placed in a box and delivered at a tool or locker room over which the inspector presides—the general method is all the same. For handling a large volume of business the second method is undoubtedly the best.

A few days pass. These first few engines do not "lose" their equipment, though a few annoying circumstances come up. The "assistants"—new men broken in—take up the work; the experienced men are transferred to other points; still the policy of "main line," "best trains" is adhered to, as it is easier to keep track of these engines. They are equipped, after the first two weeks or a month, say, at the rate of one engine a day per inspector employed. If there were one inspector employed for every 20 or 30 engines in service (this is for the "first year" only—afterwards it should be one for 40 or 50 engines) the thorough equipment should, theoretically, take only a month. But it will be longer. The branch lines will not be so easy to handle; the freight engines will cause no end of trouble; it will be difficult to secure proper material for inspectors; it will be slow at best "breaking them in." If the organization and the equipment is worked out in three or four months, the thing will have been well done. Then for a month or so the matter will be stationary, while it settles down to being the normal method of operation. Then the less efficient inspectors will be dropped, or transferred to other work—and behold! the system is complete, the ground-work is done! The equipment inspector will have to stay—or some one in his place—to be at the head of the organization; to maintain efficiency. But the capital expense ceases and the returns now come in. Is it not a subject worth at least consideration by more of our railroads?

A FEW USEFUL HINTS.

A few hints may be useful: Don't carry too much on the engine—it is meant to pull a load, not to contain one. Anything which is regularly carried on passenger or baggage coaches, or on cabooses (such as ax and saw, air and signal hose, wrecking frogs, jacks, etc.) need not be carried on the engine, too.

State laws should be fulfilled.

Every article should be marked plainly with the company initials; the manufacturer is the best one to do this. And it might be well if a little detective work were done in locating company supplies in private homes, or junk shops; railroads are generally regarded as public benefactors and providers in this respect.

Remember that if you attempt to mark each article with an engine (or individual) number, or with the name of an engineer, you are going to have many difficulties, although such markings are perhaps more useful than troublesome.

Any list put up in the cab is bound to get dirty.

Light or cheap locks, and any but bolted hasps and hinges on locomotive boxes and lockers are worse than none, as they are easily (and usually) forced or broken. Get the best locks, or make some other arrangement for safeguarding equipment.

Hostlers should have hammer, torch and screw wrench of their own, so they may have no occasion to use the engine crew's kit.

While whatever plan is deemed wisest and decided upon should be carried out firmly and consistently, one should not be too particular in details in dealing with enginemen; one defeats one's purpose; one gains ill-will rather than cooperation.

There should be real penalties for intentional or careless violation of rules framed for the safeguarding treatment or use of the equipment.

Engineers should be brought to understand that efficient system in this matter is to their lasting assistance and convenience.

Equip all engines; there is then no excuse for stealing from one to the other.

Branch line engines will require more

complete equipment than on the main line, being remote from large roundhouse facilities.

Freight engines will be poorest in equipment—and most difficult to keep in equipment, to inspect, to trace.

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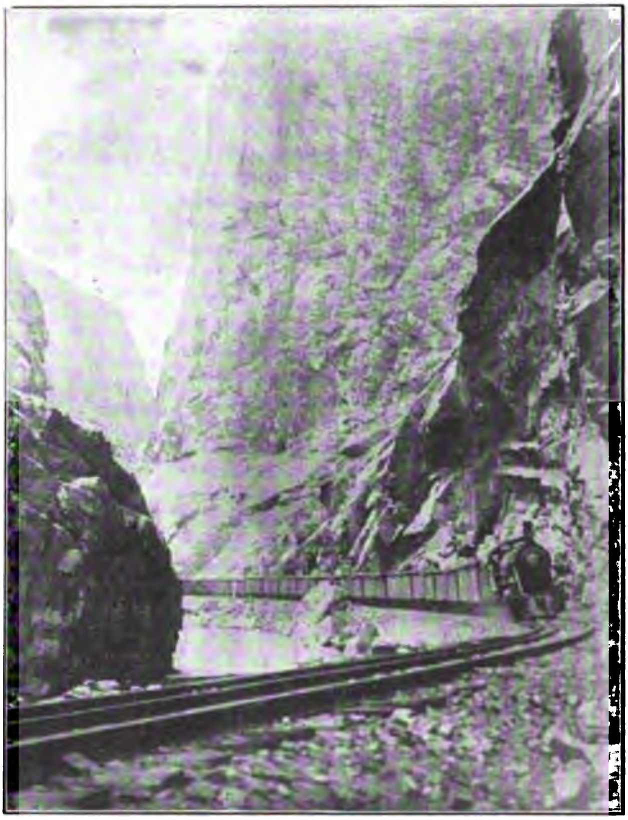

ROYAL GORGE, COLO., ON D. & R. G. R. R.

(Photo by Bro. B. Deo, Lodge 5)

Echoes from the Firing Line

Answer to a Question on the New York Brake Valve.

In the July issue of the Magazine I noticed a question asked by a member on the New York Brake Valve (Vaughn-McKee) 1902 Model, claiming that only a 6 to 8 pound reduction in train-pipe pressure could be made, even in the last servive notch.

I think that this was caused by an opening in the brake valve between passage *H*, which leads to the supplementary reservoir pipe, and chamber *B*, where it extends under the excess pressure valve, causing chamber *D* and the supplementary reservoir to be charged with main reservoir pressure.

Hence, in making service applications, main reservoir air flowing into passage *H* through this opening enters chamber *D*, moving piston *E V 104 A forward* quickly and causing graduating valve *E V 110 A* to cover port *F* before train pipe pressure has reduced as it should.

CHAS. MILLER.

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Poor Coal.

Although I am a good ways off from my home lodge, and, in fact, I left there shortly after becoming a member, and have seen nothing in the Magazine from the boys at home, I will endeavor to write a few words about the road on which I am employed.

I think a majority of the boys have read the articles in "Echoes from the Firing Line" relating to the statement made at the recent Master Mechanics' Convention by the general master mechanic of a prominent Southwestern road, viz.: That of firing an engine 250 miles without cleaning the fire or raking the ashpan, and then shaking the fire out in 15 minutes. This, I think, would be a pretty hard matter to do. We can make 250 miles on one fire, but we certainly do have to rake our pans with the coal we have. We get a very poor grade of coal, but the engines are all good steamers. I understand, however, that on the test trip referred to the engine was supplied with selected coal.

Everything is in the "pool" here, and we have some pretty good drags, 2,000 tons being the limit, but we generally get over the road in good shape. We have a good schedule and a good set of officials to work for, as well as good engineers to work with.

MEMBER.

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Poor Coal.

I received my Magazine, and after carefully reading it over I find that others are bothered on account of poor coal. We have a run of 166 miles, and it is somewhat hilly. We have four passenger trains, two each way, and have the ten-wheel Cook and Rogers engines. Some of them steam good, while others do not. Our time for this run is 4 hours and 30 minutes, but we do not always make it. Our coal is bad, and when one throws it in the firebox it swells up and bursts, and then fills up. There has been as much as 1 hour and 30 minutes lost during one trip on account of poor coal and engine not steaming. Our freight engines at present are in poorer shape than I have ever seen them. Business is good and every one is working as much as they want to. Our freight engines are of the eight-wheel type, with the short and narrow firebox, but it will only be a short time until we have the large class of engines here.

One thing I can truthfully say, we do not have clinkers to contend with, as our coal does not clinker. We have a good schedule and can make a fair month's pay. I hope that all will get better coal in the future.

MEMBER.

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Poor Coal and Other Disadvantages.

There is a great amount of red tape here where I am working. We have all classes of engines, from the smallest to the largest, from the oldest to the newest, and from the old-fashioned to the latest improved. When we do not do just as some of the officials think we should then we have to use some of the company's writing material. We have a contract with the company in regard to switch engines, something like this: Each crew will be entitled to one meal hour, which shall begin between five hours and five hours and a half from time of going to work, and if held on duty longer than five hours and thirty minutes they shall be paid one hour overtime and be allowed 40 minutes in which to eat. I tied up a crew after being on duty six hours and forty-five minutes, and just as soon as the yardmaster turned the engine in he reported the fireman for tying up the crew. The consequence was that statements had to be made out for the yardmaster, trainmaster, agent, master mechanic and superintendent, and probably when we think we are through with them all another letter is received asking what we are going to do in the future when such a question arises. I referred to the article in our contract governing same and was told that the company would not stand for any fireman tying up a crew, and that they must take their lunch with them if they are not going to get through with the work in time. I would like to hear from some of the other brothers if they have troubles of this kind.

Of course, our engines are some better than they were a few years ago, but when we get a tank of slack and dirt to fire with we try to spread it on the fire, but it sticks so tight to the shovel that we can hardly get it off, because this kind of fuel has to be wet down or it will all go out of the stack as fast as it is put in the firebox. We work very hard on account of this coal, and when we get in there is a message wanting to know why we failed to keep engine hot. When the next fireman goes out very likely he will have a good tank of coal, and keeps the engine hot, and then the officials say that the other fireman was no good. I recall one instance when a yard fireman was called to make a trip on the road, and with the poor coal he had could not keep the engine hot and make proper time with two cars. The next day I was on this same engine and kept her hot all over the road. Now, I would like to hear from some of the brothers who have to put up with these same conditions. MEMBER.

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Experiences in the Northwest.

Having been a member of the B. of L. F. for the past three years, I want to say a few words to our worthy brothers, as I am on the verge of being classed as a "boomer." I have had enough misfortune to bring me a new job just about every change of the moon. Five years ago on the railway on which I am employed I filled a personal record blank covering my record for nine years, passed the required examination (on eyes and ears) and was put to work as a locomotive fireman.

At that time the smallest make of consolidated engine were considered a very large battleship. After shoveling about as much dirt on a trip as it would take at the present time to pick up a train and change from simple to compound, I would (like a great many others) register in at the restaurant, collapse in the nearest chair, and resolve in a loud voice to go sheep herding on the following day, providing I woke up again. The firemen have considered themselves overworked and poorly paid from the start, but I think this is about the most appropriate time they have ever had in which to complain. Perish the thought that locomotive firing is good exercise or a healthy position for a minute, and consider what a constitution is required to enter the service. There are a few engineers who have been running for ten years or longer that will tell the firemen of the present date how they did their work, the time they served, and the big engines they fired, and when the pointer on a hog refuses to respond, instead of getting down and taking a peep at the real thing, that class of men will say, "Put some up in front," and when a stranger gets on the engine with them they begin to analyze his personal record, or salute him with a "Who are you?"

I was given a position at this place in preference to transportation, but am afraid it will cost an awful effort to stay for promotion. We are called two or three hours before leaving time (just as the caller pleases), and leave the house wondering how long it will take to make the voyage. As business is crowded on the main line, we go over a branch route, which is forty miles farther, and on which a dray can take and make better time. They call it "going round the horn"—a fair comparison to going round South America after the canal is done. We have the Schenectady cross-over compound locomotives of the perspiration type. After eating about fifty cents' worth of rawhide at the nearest boarding house, we can climb up on deck, strip down to a thin suit of underwear, don the blue, and get ready to transfer thirty tons of good, dusty Pittsburg coal. Then we fill and trim the necessary lamps, wipe the windows, fill about three lubricators, take water (if we get a chance at the tank track), steal a clinker hook and pinch bar, fill a couple of engine oilers, place the tallow pot in emergency position, hand the engineer the monkey-wrench and a piece of waste, and then get a jug of water, when we are ready to give the "hog" a couple of switches on the lead, and that usually completes the roundhouse performance. After this we couple on to about seventy-five loads; loading is a great advantage, as the shooting-off system begins on the arrival of the captain. The runs, like most others, are not fast enough to make any one seasick, but a burning pain in the stomach is often experienced before the trip is completed.

MEMBER.

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Grease as a Lubricant for Locomotives.

During the past five years the use of grease as a lubricant for the driving journals and crank pins of locomotives has rapidly increased, so that it is now the regular practice on the majority of the railroads in the United States and Canada. In order to insure success with such lubricant several modifications are made in the ordinary driving box. There is no groove or oil hole in the crown of the bearing, but slots are located in the sides at an angle of about 30 degrees from the horizontal. The bearing surface is cut back ¾ to 1 inch from the bottom edge, so as to give a slight clearance. The cellar is fitted with an inner case held up to journal by springs and covered with a perforated plate, through which the grease is forced. For main and side rods the cup is provided with a screw plug, which forces the grease through the cup and distributes it on the bearing. The consumption of grease for driving and crank pin journal on the Lackawanna is reported as 450 miles per pound for consolidation engines and 465 miles per pound for passenger engines.

In a report on grease as a lubricant, presented at the recent meeting of the Traveling Engineers' Association, it is admitted that oil is a more natural and better lubricant for locomotive bearings than grease, and as it has a lower viscosity, it offers less resistance to motion, but owing to the fact that grease remains on the bearings when they run at high temperatures, its use tends to reduce engine failures. Driving journals and crank pins on large modern locomotives are difficult to maintain in a good state of lubrication with oil for the following reasons: First, they are exposed to high temperature radiating from the firebox and ashpan; second, careless methods at the ash pit allow locomotives to stand over hot coals, and a neglect to dampen ashes allows dust to collect on the bearings; third, large driving box cellars are difficult to remove and apply, which leads to indifferent and careless methods by those assigned to box packing; fourth, the waste packing is often of poor quality and the jarring of the engine causes it to settle away from the journal. It is probable that this latter is the principal reason why lubrication by oil with waste packing has so often failed on large bearings.

The report above referred to states that grease as a lubricant for any but driving journals and crank pins is not an economical or safe practice. Some roads have used grease for lubricating eccentrics and others have applied it to the journal bearings of trailing axles and those of the leading engine truck, but in such places it does not appear to be entirely satisfactory. Various reasons have been given to explain why a lubricant like grease may be successful on a driving journal and not on a truck journal, but we believe that the best one is that which takes account of the variation in pressure on the back and front of the driving journal with each succeeding stroke of the piston, allowing a viscous lubricant like grease to reach the upper portions of the bearing. In a truck journal the axle is not connected with reciprocating machinery, the pressure on the bearing is nearly constant, and the same opportunity for the lubricant to reach the zone of greatest pressure is not found. This lateral movement of journals in their bearings is also found with crank pins, and this explains why the permissible pressures per square inch of bearing in main and connecting rods is very much higher than with ordinary car bearings. It is also a good explanation for the successful use of grease on large locomotive rod bearings.

When used as a lubricant grease requires that the journal shall be heated up to such a temperature that it will cause it to flow. The generation of heat in this way must be at the expense of power and of wear, and for this reason it can not be regarded as an ideal lubricant, but rather as an emergency measure. The tests of consolidation locomotives with cylinders 22 by 28 inches on the Pennsylvania Railroad plant at the St. Louis Exposition were made with one engine lubricated with grease and one with oil, and it was found that the friction of the machinery was much greater when grease was used. At 160 revolutions, equivalent to 26.6 miles per hour, the engine on which grease was used developed 1,100 cylinder horse-power, and the lost work due to machine friction amounted to 224 horse-power, or about 20 per cent. At the speed given this is equivalent to 3,171 pounds frictional drawbar pull. It is also demonstrated by a brief experience that the wear of axles and crank pins when lubricated with grease is much more rapid than when oil is used.

There is little difference in the cost of lubrication with oil or grease, but the increased resistance due to the use of grease must require a larger consumption of fuel, and the more rapid wear of journals calls for more frequent renewals of axles and crank pins, so that the total cost of locomotive operation when grease is used for lubricating the main bearings must be greater than it is with oil. During the present period of prosperity and heavy traffic lubrication by grease has undoubtedly rendered great resistance by preventing delays due to hot bearings, and the operation of the locomotive is made much easier and is attended with greater comfort to all concerned, from the superintendent of motive power down, because it is less troublesome, though directly more expensive. In dull times, however, when smaller economies are carefully investigated, the question of the actual economy of grease lubrication must come under review, and it is possible that then greater efforts will be directed toward the successful use of oil, as better methods than those which depend on the usual waste packing have by no means been exhausted.
—The Railway Age.

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Technical Contributions

Taking Care of the Engineer's Brake Valve.—The Equalizing Discharge Valve.

Engineers in all branches of railroad service do not seem to have a full realization of the importance in having that part of their brake valve in correct operative condition that exhausts the train-pipe pressure when making service-brake applications—the equalizing discharge piston and valve, together with their correlative parts, such as the equalizing reservoir, rotary valve ports, air gauge, piping, etc.

In the fourth position of the brake valve handle this equalizing mechanism operates to reduce, by exhausting, pressure from the train brake pipe rapidly enough to cause the triples on all of the cars to make their definite initial movement, supplying enough pressure from the auxiliary reservoir to the brake cylinder to force the piston past the waste, or leakage groove of the latter, and the shoes against the wheels, regardless of the length—however long—of the train line; yet, with the shortest possible train line—piping of little volume—say the light engine, with quick-action triple on the tender—it must reduce that pressure so very slowly as not to permit the sensitive quick-action triple valves to slide into emergency position; and this shifting of the capacity of the discharge valve to empty the train brake pipe is done automatically; therefore, the correct adjustment of parts, and ease of movement must be maintained, or trouble will result—troubles, too, that many engineers do not understand; some that they do not associate with brake valve defects, in their minds, causing trouble and expense to both engineer and railroad company, and it is these that I shall try to make plain.

It is understood, of course, that you are a student and have familiarized yourself with the inside construction of the engineer's brake valve—especially the equalizing piston and discharge valve—remembering that the two forces that we are "up against" when making a service application are the pressures in the train brake pipe *beneath* the equalizing piston, and the pressure in the chamber *D* *above* the piston.

Pressure, to any extent, can be held in a space as small as desired, but *volume* or *amount* is required as well as pressure in chamber *D*, in order that it may be *gradually* reduced. It should be, say, about 12 inches in diameter by 12 inches in height.

Now, that would make the brake valve too large and bulky—wouldn't hardly be room for it in the cab; therefore, chamber *D* is made only large enough to permit the required lift of the equalizing piston, and a pipe leads from it to the equalizing reservoir, where the necessary volume is contained, this pipe branching off to the duplex air gauge, the black pointer registering the pressure in chamber *D* always, but only showing train-line pressure when the brake valve is in running position, because both pressures are in communication with each other then, and continue to hold equal pressures after the brake valve has been placed on lap, unless train-pipe leakage is unusually heavy.

When the pressure in chamber *D* is reduced the equalizing piston rises and its discharge valve is opened, exhausting pressure from the train pipe until it is down to an equalization with that of the air in chamber *D*, when the valve automatically closes.

In case of unusual action, remember that the only causes for the discharge of pressure from the train-line exhaust are: Reduction of pressure in chamber *D*, and increase of the pressure in the train pipe without any corresponding increase of the pressure in chamber *D*. The normal action is when the reduction of chamber *D* pressure is effected through the preliminary exhaust ports of the rotary valve, in the service-stop position.

The pressure in chamber *D* can not well be reduced while the engineer's brake valve is in running position, because it is then being kept supplied with train-pipe pressure through the equalizing port, which will more than equal any losses from chamber *D* through mere leakage.

But there are a good many places for this leakage to occur—the same on every engine in the United States that is equipped with up-to-date Westinghouse brake valves—so let's figure out, and remember, where they are:

First, gasket *32*, the large leather one between the lower and intermediate portions of the brake valve body, that also cushions the upward stroke of the equalizing piston. If the gasket is in good shape a leak through it from chamber *D* to the atmosphere may be stopped by tightening the four main bolts of the brake valve body.

On the right-hand side of the lower section of the brake valve body is the pipe fitting from chamber *D*. It has been known to leak at the point where it screws into the valve body. Try it with soapsuds. This fitting has two unions a few inches from the brake valve, one in the branch pipe line to the air gauge (black indicator), and the other in the route to the equalizing reservoir. If they neither leak, try all of the ordinary joints in the piping, and you will probably come to a brass, ground-joint union at the air gauge connection, which is one of the oftenest to leak and the hardest to find.

It is very important that no water shall accumulate in the equalizing reservoir, and there is a drain plug in the bottom of it by means of which it may be drawn off occasionally—another possible point of leakage. Some engineers remove that plug and substitute a ¼-inch drain cock, but it should not be done, because those cocks are quick to score out and leak.

The leak hardest to find, however, when only a slight one, and that very often happens, is in one of the gauge tubes. Either the tube splits or the solder softens where the outer end of the tube is closed and the movement attached. It has often occurred that every indication pointed to the *fact* of a leak of chamber *D* pressure to the atmosphere, but not being able to find the leak the inspectors concluded that they were mistaken, and the trouble continued until some one well enough posted to know that the leak *had* to be from some part or connection of chamber *D* broke into the air gauge and found the leak there, having been so muffled by the gauge casing as to deceive everybody but the man who looked there for it, because he knew it had to be there.

When the engineer's valve is lapped, main reservoir supply to the train pipe is closed, and train-pipe supply to chamber *D* ceases. Now, if those leaks that were heretofore so insignificant will let the pressure escape from chamber *D* faster than it can be supplied through leakage from the train pipe past the equalizing piston, the piston will rise, and there will be a steady, or intermittent, but continual exhaust of train-pipe pressure as long as the engineer's valve remains on lap, or until the train pipe is emptied; but if the leakage past the piston is as great as the outleak from chamber *D* and the equalizing discharge valve does not open, this drain of pressure is finally from the train pipe, and if the train line is short the reduction will cause brakes to apply.

When operating Westinghouse quick-action triple valves that have been in service for some time an irregular action nearly the same as just described will be obtained from the equalizing discharge valve when there is nothing whatever wrong with it or any other part of the engineer's brake valve, if unnecessary reductions are made from chamber *D* after the brakes are fully applied—after a 25-pound reduction has been made. These leaks, or blows, do not tend to further reduce the train-pipe pressure, but *prevent its increase*, are short in duration, and not accompanied by any fall of the black gauge pointer. The cause is that brake cylinder pressures are passing to the train pipe through leaking check valves in the quick-action triples. This can not take place until the brake cylinders have received all of the pressure that the auxiliary reservoirs can give them, which means a complete application; *nor then* unless the engineman keeps drawing off more of the train-line air, because he doesn't know any better, or gets rattled; and engineers have booked orders to have brake valve tested to find the supposed defect that was causing the equalizing piston to flutter, unmindful of the fact that the brake valve had given proof of its own proper action at every service reduction that was necessary to secure full-on applications of the brakes. Any brake valve of the equalizing discharge type will show those latter irregularities under the conditions as stated.

When our train changes engines we will release and recharge the brakes before cutting off the engine, and after it pulls away from the train the inspector opens the angle cock and draws off about 40 pounds of air to hold brakes applied for inspection. No matter how gently the reduction is made, at the instant that he closes the cock the brakes on the baggage, mail and express cars automatically release at their triple-valves. The reason is, in running over one division the cars with smallest cylinders and longest leverage develop longer piston travel, with the same shoe wear, than the heavier coaches with largest cylinders and shorter leverage; the highest pressure was obtained in the cylinders of shortest piston travel, and, following the 40-pound reduction, it leaked back through the check valves, increasing the train line to a greater pressure than that in the auxiliary reservoirs and brake cylinders of longest piston travel and least final pressure, thereby releasing the triples on the latter cars.

The reason that this release did not occur when the engineer made a 40-pound reduction was that the equalizing discharge valve prevented any increase of the train-pipe pressure by that popping and irregular action that we have alluded to.

It was to prevent such premature release of brakes, caused by undesired increase or surge of the train-pipe air, that the equalizing discharge valve was introduced, and later found to be absolutely necessary to the proper operation of the quick-action triple valves when they came into use.

There is no way of knowing how fast we can draw pressure direct from the train pipe without the triples jumping into quick action, an experienced brakeman finding it difficult to make a strong service application by opening the rear angle cock, when he is in a common hurry; but by subletting the job to the equalizing discharge piston and valve, arranging the sizes of ports and volume of chamber *D* in correct proportion to each other and to the lift of the valve, the pressure can be discharged from a volume of the length of the longest freight train rapidly enough to actuate all triples, and fill the brake cylinders quick enough to get their pistons all out past the leakage grooves. Yet, with a short train, this same valve will automatically so reduce the volume that it discharges per second that in case of the engine and tender alone a quick-action triple on the tender will give correct graduated applications if it and the engineer's brake valve are both in proper condition.

A train line of seven or more cars in length contains enough volume that it may be reduced through the widest opening of the equalizing discharge valve without the triples going on at emergency, and the arrangement of ports, etc., are such that the train-pipe exhaust does open fully at any chamber *D* reduction when there are not less than about seven cars.

As the train line is shortened to less than five or seven cars the equalizing piston does not rise quite to the leather seat (gasket *32*), at service reductions, and the lift becomes less, until with the light engine the opening of the equalizing discharge valve is so slight that the train-pipe air exhausting through it is hardly noticed, its sound being indistinguished by the louder blast from chamber *D;* and this is necessary, as, if the pressure was discharged from a train line of but five cars, or less, through the full opening of the equalizing discharge valve, quick action would ensue.

It is essential, therefore. that nothing disturb this automatic restriction of the train-pipe exhaust, and to that end *standards must not be altered.* Do not allow any water to collect in the equalizing reservoir, as that reduces its measurement of air pressure capacity; in fact, those 10-inch by 12-inch reservoirs, as made for years, were never an inch too big, and they are now being made 10-inch by 14½-inch.

The preliminary exhaust port in the rotary valve seat—the one bushed down till it is only the size of the brass wire you use in tracing the passages through air-brake sectionals—must not be permitted to grow any smaller by gumming up, but do not clean it out with a nail or other hard instrument that may cause the least bit of increase in the diameter of this small port.

Do not remove the elbow fitting at the train-line exhaust, and don't trust a brake valve with this elbow missing to operate a train of air. It is sometimes taken off when the engine is to be used as a switcher, in order to secure prompter action of the driver and tender brakes in the service notch of the brake valve. The smallest area for the outlet of train-pipe air is through this elbow, 9/32 inch in diameter —about a quarter of an inch—so that its removal means quite an enlargement, and an inducement to quick action.

At a service brake application the reduction of chamber *D* pressure through the preliminary exhaust ports should cause the black pointer of the duplex gauge to fall at the rate of five pounds per second, or not less than four seconds nor more than five seconds for a fall from 70 pounds down to 50. If the drop should be faster—from defects, as noted—the result will probably be quick action, on a passenger train, and an undesirably heavy service brake application on a freight train.

With all parts correct in size, and so on, heavy action at the wrong time frequently occurs on account of equalizing pistons being sticky from dirt and gum, or a new ring "fitted" to the piston by the boiler washer in an idle moment.

To test the sensitiveness of the equalizing piston make service reductions and notice difference in time between the beginning of the preliminary exhaust and train-pipe discharge, which should be but barely noticeable—something that but few engineers pay any attention to.

During the summer the instruction car visiting a division terminal stood on a "safety deposit" track close to the cinder pit. I slept in the car, and during the three weeks I heard through the open window the hostlers stop every engine on two divisions at that clinker pit by service applications; and to every engineer that came to me I could tell the way that his train brakes acted, usually, at service applications. From some engines I could hear nothing but air from chamber *D*, while on others the service-stop position caused a blast, delayed, but loud as an emergency application.

So don't always think it's defective triples when you jerk the train—or it you. All winter long a local-stop, three-car passenger train, pulled by the same engine every day, but by two alternating engineers, was having trouble with the brakes banging on at emergency at ordinary station stops. One of the engineers *knew* it was the fault of train brakes, and that settled it—from his point of view. The other man wasn't so sure, and if there was anything defective about the engine equipment he wanted to find and cure it.

Close testing proved the train brakes all right, but, for the assurance of dead certainty, bran-new quick-action triple valves were installed on the cars, yet still they "wouldn't be good"—didn't give emergency action at every stop during a trip—just occasionally, but they never missed a trip.

Having the train brakes eliminated from the zone of suspicion, the cause of the heavy braking *had to be on the engine*, and, meeting her in from an unusually rough trip in charge of the man open for conviction, I proceeded to test for the sensitiveness of the equalizing discharge valve—or its piston—making continuous 5-pound reductions. Chamber *D* and the train pipe would begin to exhaust at almost the same instant, and it began to look like an alibi. About two dozen correct reductions had been made and the engineer had observed that "if anything wrong could be found by such a test he would have located it a long time before," when an initial reduction from 70 pounds failed to open the train line exhaust, a clear, heavy blast coming from chamber *D* until the black gauge pointer had fallen to about 55 pounds, when with a flash the equalizing discharge valve opened and the train-pipe air was out within about one second.

Then the engineer, in his booking of required repair work, ordered that the equalizing piston be examined for defects, and he stayed with them until the work was attended to; and both engineers never again shook up the passengers on the plug run.

The matter was traced back to the day the engine was turned out from the back shop. The man that broke her in, light, up the hill to Gun Club and back, could get no train-pipe exhaust in the service position of the brake valve, and had used the emergency. After a while he opened up the brake valve and found the equalizing piston stuck in the down position by what appeared to be a piece of iron screw-thread wedged between the packing ring and bushing; worked it out, and the equalizing discharge was *apparently* in normal condition again; but the scars remained.

The engine was turned over to the regular crews on the local passenger run, and trouble from the brake valve began at once, occurring only, however, when the equalizing piston had rotated to bring its burred edge into conjunction with the roughened spot on its cylinder wall; then the piston would not rise until quite a heavy reduction had been made from chamber *D*, which made the train-line pressure so much the greater that the piston would finally be forced up past the impediment so suddenly as to pull the discharge valve wide open—which is unnatural with so short a train line—thereby generally effecting an emergency application of the brakes, at some such applications also sliding wheels, and under certain conditions favorable thereto skidding them flat.

The cause of the trouble had not been found during all those months just because it was not "dead easy" to find; and meanwhile, who was responsible for the expense of replacing those damaged wheels, many of them steel-tired?

Test your equalizing discharge, as a preventive of trouble that may reflect on your ability. One of our old and reliable engineers had a brake valve damaged to the same extent as the one in the foregoing case, but evidently a tool mark gouged by a careless air-brake inspector. It gave trouble on the outbound trip from the home terminal, and at the other end of the line he reported it verbally to the air-brake inspector, but *did not book it*, the inspector later denying any knowledge of the matter. Nothing was done to the inside of the brake valve, and with a train late to start with on the return trip, a rainy night and several extra stops, the engineer lost his usual self-possession, and flattened wheels under every car in the train, for which he suffered suspension for 30 days. Besides the air brake moral to be drawn, there is another one involved: Make *written* work reports. Your presence may not be as awe-inspiring nor work-compelling as you imagine.

Don't get to thinking that defective conditions can not exist in your brake valve, that is constantly under your eye and hand. Sometimes a troublesome equalizing discharge piston is unnoticed as such. Of a certain class of passenger power only one engine had a quick-action triple valve on the tender. It was transferred to another division, and the T. E. was riding with the engineer to note results. They both appeared later at the instruction car, with the triple valve under discussion and the question up as to whether it would have a tendency toward quick action when service stops were to be made with their train of four cars. I didn't examine the triple at that time, but I *did* investigate the equalizing discharge valve, and found the piston very dirty, with the packing ring stuck tightly in its groove by gum. We cleaned all parts well, and put a very little touch of valve oil on the sides of the packing ring and the cylinder. We only had the common oils that are used about an engine, and valve oil was the least objectionable. Well, there was no further trouble experienced, and the engineer stated that he *had been* getting undesired quick action too regularly until the day that we cleaned his brake valve.

When you have got nothing better, use valve oil; and it is the best lubricant we can get hold of for hot surfaces; but I hate to see it used anywhere else, for on rather cool parts it pulls. It is too viscid —absorbs the dust and becomes the most troublesome gum imaginable.

It has long been a hard matter to find a lubricant just viscid enough to hang on and stay where you want it, to have all of the necessary qualities and be of the same consistency summer and winter, not to dry up nor gum—for use on equalizing discharge pistons, triple valves, rotary valves and all cool-air brake parts.

A newly prepared lubricant, "Dixon's air brake and triple valve grease," is a graphite of an impalpable fineness ground with an oil of such texture that it becomes at once the lubricant that everybody interested has been looking for. Spread on a plate, it is seen to be highly transparent and free from lumps and roughness.

A great test question on the brake valve in the examination list, the study of which teaches a whole lot about the equalizing feature, is: "The black gauge pointer showing 70 pounds, lap the engineer's valve and open the angle cock at the rear of the tender, leaving it open. When you return to the cab, where will the black hand then be standing—at what pressure?" The boys all tried it, with varying results. Why were the effects different? The difference is due to the differing degrees of leakage past the equalizing piston packing ring, and that, with the fact that with a bran-new brake valve or a new and correctly fitted packing ring, the black pointer remained indefinitely at 70 pounds, showed that *technically* there is no connection between the train-pipe pressure and that of chamber *D* on lap, but *practically* there is, because a common packing ring never can make an absolutely air-tight joint; and this we know because heavy train-line leakage is shown on the black gauge by lapping the valve.

Well, if pressure leaks downward it can also leak upward past the ring, and while a well-posted engineer can get good service from an equalizing discharge valve whose piston leaks badly, because he allows for the leakage in his reductions, it may suprise many young or inexperienced engineers to learn that a whole lot of their break-in-twos and general tear-ups were largely due to this packing-ring leakage.

When switching with the air brake operative on the engine only, it is nothing uncommon to see the engineer turn his brake valve handle into the emergency position and quickly return it to lap; the triple valves usually release their brakes, then, and the engineer reports both triples as defective. This manner of braking is extremely dangerous under certain conditions; with the brake valve on lap the train pipe is closed, chamber *D* contains an undisturbed volume and pressure of whatever it was before the reduction was made, and this air leaking down past the equalizing piston increases the train-pipe pressure and releases the brakes. In the instruction car such a dip into emergency nicely calculated, has released the brakes of ten cars. Hostlers should keep this in mind when stopping an engine for short waits at the turntable and the other stations on the Hostler's Short Line.

We all know that the rule never to release brakes on a freight train when the speed has been reduced to, say 12 miles per hour or less, but complete the stop before releasing, can not be lived up to if it is expected to keep trains on time; so, to enable the freight engineer to make running releases without stretching the train in two, the straight-air driver and tender brake has been devised. It is not yet in general use, however, but most freight engines are provided with driver brake retaining valves that will retain the whole pressure that is in the cylinder when the retainer is cut in.

Now, an initial brake-pipe reduction of five pounds by the gauge results in producing a very slight piston pressure, because the first 15 pounds of pressure that enters the cylinder only serves to balance the atmospheric pressure of 14.7 pounds per square inch on the other side of the piston, and the longer the piston travel the more pressure must the auxiliary reservoir give to the cylinder before the piston becomes effective.

So, few engineers draw off that small amount—draw off, say eight or ten pounds. But while it only takes a couple of seconds to reduce chamber *D* that much, a big brake pipe on from 40 to 80 cars contains so great a volume that it takes a long time for 8/70 or 10/70 of its pressure to be discharged through the 9/32-inch exhaust port, and during this time the opening between the points of the piston packing ring permits the excess of train-pipe pressure to begin the recharging of chamber *D*, and by the time that the two bodies have equalized the black gauge will have risen to probably 65 pounds, and the equalizing discharge valve will close, holding the train pipe pressure at that figure instead of the one to which the black hand had originally been drawn. An engineer seldom looks at the air gauge after he has noted the amount he has reduced the black hand. An actual 10-pound reduction of brake-pipe pressure should furnish about 25 pounds of force per square inch on his driver-brake pistons. He imagines that he has got it, and with but 5 pounds, instead, he releases while running about five to seven miles an hour, upon getting the "high-ball" from the train that he is to meet, in the siding. Of course, there will be a break-in-two, three, or four, that will cost the company a lot of money—and you know how to test to find the leak.

A blow from the train-line exhaust—equalizing discharge valve failing to seat—is sometimes caused by the valve spindle being cramped in the guide to the valve, most common to the D-8 type, and caused by the elbow-shaped seat falling out of line from the hammer-blow of the equalizing valve when it closes. It makes the piston hard to work up and down with the fingers, and is often attributed to an overtight packing ring by the inspector; and, as he will not be able to cure a disease that he can not "diagnose," test and diagnose your own brake valve and book your work report.

I have seen an engineer get rattled and break his train in two trying to stop a blow from the train-line exhaust that was caused by a piece of scale between the equalizing discharge valve and seat. When anything gets in the valve to hold it open and you are moving along with a train, close the cut-out cock in the train-pipe connection to the brake valve and draw off 20 or 30 pounds in the service notch; then push the handle to the full release position and the discharge valve will pound on the seat several times with such force that it will crush and blow the scale away. Then, after the popping has ceased, open the cut-out cock and immediately return the valve handle to the running position. WILL W. WOOD.

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What Ails the Triple Valve?[*]

As is pretty well known by all air-brake repairmen, oil is the natural enemy of rubber, so a very little oil on the rubber seat of the emergency valve, or where it can work into the check-valve-case gasket, will start them to decay so that in a few months the rubber seat will begin to leak, and its use in the emergency application will hasten the time when it will be in so bad a condition that it must be renewed.

It does not get such a great many of these applications by the brake valve route, but the trainmen usually manage to open angle cocks suddenly enough after coupling up the hose on charged-up cars so the triples go into quick-action, and air blows by the open valve and the decayed rubber breaks off. With a leak past this valve, or by the case gasket, train-pipe air can get from the train pipe into the brake cylinder opening in the triple valve. If the triple is in release position this air may be able to pass out through the exhaust port, and later on through the free release port of the pressure retainer. When the triple is moved to service position, especially with a very light application, air will continue to pass from the train pipe into the brake cylinder till the train-pipe and brake-cylinder pressures have equalized. If there is time between the first and second reductions of this application the brake-cylinder pressures will get so high that the car will be doing more than its share of the braking, or holding the train, and this is a good recipe for slid flat wheels. We can call this defect No. 4. Another defect of much the same kind is an emergency piston or valve sticking, so the valve is held in open position. This defect will hold the brake set after the triple has gone to release, because the air will pass by the open valve faster than it can get out of the exhaust port. Unless jarring the triple valve with something hard will shake the valve loose, the only remedy when on the road is to cut the triple out at the cross-over cut-out cock and bleed the auxiliary. We will number this Defect 5.

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[*] Continued from November, 1905, Magazine.

There is another rubber gasket that goes with the quick-action triple which gives considerable trouble when it leaks. It is the one between the triple and the auxiliary reservoir or brake cylinder connection, depending on the type of the brake. When air leaks past this gasket to the atmosphere it has the same effect as a leak at the bleeder; that is, to waste air all the time and release the brake at once when it is applied. When it leaks into the opening to the brake cylinder it will at first apply the brake harder, till the auxiliary pressure is reduced lower than the train pipe, when the triple will move to release position. If this leak is very bad it will prevent the brake applying at all, for if it can take the air out of the auxiliary faster than it can come through the feed port of the triple valve, the pressure in the auxiliary will be lower than that of the train pipe, and will not move the triple piston from release position. This is especially true of the F-36 triple valve used with the 8-inch freight brake, which has a very small feed port. This defect is very much like a leak into the auxiliary tube, which is the pipe that takes the air to and from the triple and brake cylinder with the cast-iron auxiliary of the freight brake; but a defective auxiliary tube is rare. We might also put in with this defect a leaky bleeder valve, and number it 6.

Sometimes it is necessary to report on air-brake defects, and it is very easy to tell the difference between a train-pipe leak and an auxiliary leak. Shut the cock in the cross-over pipe, which will stop the flow of air into the triple from the train pipe; if the brake applies at once it is a good sign of a train-pipe leak, the blow from the exhaust will stop because the exhaust port is covered so brake cylinder air can not get to it. If the leak is from the auxiliary and not from the train pipe the brake can not apply, but the pressure will gradually reduce till the auxiliary is empty.

There is another defect that will cause a blow at the triple exhaust and free exhaust port of the retainer; this is a leak into the exhaust cavity of the slide valve. These cavities are tinned over to stop any porous spots or blowholes in the brass, so that there is no trouble from that source. But when the valve seat or the face of the valve gets cut or worn out of true, auxiliary air can pass into cavity, and as this is always open to the exhaust port, any air leaking in there will pass out, whether in release or applied position. A very bad leak here will tend to release the brake. To test for it, set the brake with partial application, and if the blow does not stop, blame it on the slide valve and number it 7 on our list.

To keep the brake-cylinder air from getting back into the train pipe when an overreduction of train-pipe pressure has been made at the brake valve, train has broken in two, or a hose has burst, the train-pipe check valve is put in the triple. It is designed to let train-pipe air pass it towards the emergency valve and cylinder, but to prevent the passage of any air from the brake cylinder back to the train pipe. As long as this valve is tight on its seat all goes well, but when it leaks, as in the case of a break-in-two or a burst hose, the brake connected to this leaky valve soon loses its power. For this reason the rule now is to close both angle cocks next to the parted couplings or bursted hose as soon as possible, and thus hold the air in the train pipe that leaks by the check. This may prevent runaways on bad grades.

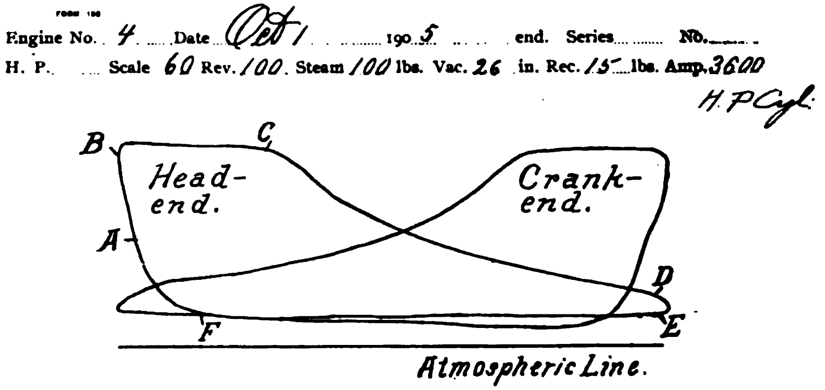
We will not consider a very serious overreduction of train-pipe pressure when making a service reduction, for no real capable air-brake man will do that. On the other hand, no engineer will think of violating the rule in making an emergency application in times of danger to train or persons, which says "put the brake valve in the emergency position and leave it there till the train has stopped or the danger has passed." We can call the leaky check valve defect No. 8.

In cold weather—just a little below freezing—not down near zero—triples are liable to freeze up, because some of the moisture in the compressed air, which should have separated and remained in the main reservoir, has passed back into the triple and congealed on the surfaces of the cylinder and slide valve seat. This makes plenty of trouble by causing that triple to stick at the first service reduction, and then go into quick action. Do not blame the triple for this work, for it is the fault of the main reservoir and pipe connections between the pump and the reservoir, which have not cooled the air off before it passes out of the main reservoir. In zero weather the air cools off before leaving the reservoir.

We might speak of small pinholes in the castings which make up the valve, but that is so obviously a manufacturer's fault that most of them are detected before they get out into service. Also the matter of the passages being stopped up by the cores washing out when the molding and pouring is done should be looked for when the triple is first assembled. The strainer in the train pipe, as well as the small strainer located in the union connection of the train pipe to the triple, are expected to keep all foreign matter out of the triple, but the condition of valves when taken apart after long service shows that these strainers do not wholly prevent dirt and grit working into the valve. When once in the valve it gives unending trouble from excessive wear of all moving parts, and from getting between the various valves and their seats, causing leaks and general debility.

Once in a while it is stated that "the triple was dry and needed oiling." That is a common-sense way of looking at the value of lubrication, but tests have shown that after the rubbing surfaces have got a smooth, glazed surface from service under perfectly clean conditions, the triple valves will show very little wear, and move back and forth with very slight changes of pressure. This, in a measure, goes to prove that cleanliness is as great a factor in good service as lubrication. However, it does not prove that cleanliness can not be helped out by good lubrication; for that reason, keep the triple valves clean, very sparingly lubricated, and give them a fair show.

JOHN W. TROY.



FORM 100

Engine No. 4 Date Oct 1 190 5 end. Series No.

H. P. Scale 60 Rev. 100. Steam 100 lbs. Vac. 26 in. Rec. 15 lbs. Amp. 3600

Fig. 1

Value of the Indicator—Part III.

It will be understood that different engines will give different diagrams. A common "D" slide-valve will not give as perfect a card as will a Corliss or other four-valve engine, as the ports are opened and closed more slowly and this causes a "wire-drawn" admission, cut-off, and release.

It will also be remembered that the horizontal line which the pencil describes on the card corresponds to the stroke of the piston, and all vertical movements of the pencil are caused by the steam pressure in the cylinder.

We will now take up the seven different events as they are shown on the card.

First.—The Admission. Fig. 1 shows a card where the admission line is *A-B*—

very good. It will be noticed that this line runs vertically with the atmospheric line. The writer has charge of four large, high-speed compound engines, and we have found that a little late or slightly rounded admission line is conducive to smooth and quiet running. The only reason why this should be the case may be due to the fact that we have about 35 feet of steam line for each engine, and as steam under high pressure will move at a high velocity it seems reasonable to suppose that the rapid opening and closing of admission valve causes a correspondingly rapid fluctuating of the steam velocity, and the stopping and starting of this volume of steam is accomplished more gradually with a rounded or slightly late admission.

FORM 186

Engine No.................Date.............................190..............end. Series..........No...........

H. P.............Scale..........Rev.............Steam.......lbs. Vac..........in. Rec..........lbs. Amp...........

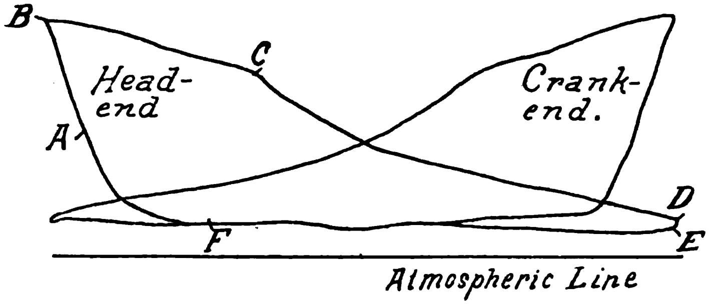


Fig. 2

We have now learned that by the shape of the admission line we may know if our engine has sufficient lead. We have also learned that lead is the amount of opening which the valve presents for the admission of steam when the piston is at the end of its stroke and the crank is on the dead center.

At the risk of calling down the wrath of the Editor and getting this letter dumped into the waste basket, we will relate a little incident that happened to the State Examiner of Stationary Engineers, on a journey of inspection. It seems the Examiner had learned of a sawmill in one of the rural districts, the engineer of which had not complied with the State law and secured a license. The Examiner arrived on the scene, and, using all the diplomacy he could command, he proceeded to question the engineer, who, it seems, did not think he might be entertaining an angel unawares, and he got on his dignity and answered the questions that were put to him in a manner that would tend to discourage a very prolonged interview. In the course of the interview the Examiner asked him how much lead his engine had. He rather indignantly replied: "Wall, stranger, I kalkerlate thet this is the kind of an engine that don't need ennybody ter lead it. By Gad, she's got fixins inside that make 'er go when I turn on the steam."

We beg the reader's pardon for this digression from the subject. Perhaps it is only natural to laugh at the ignorance of others, but, if we are honest, all of us can take a look backward on the trail of experience to a time when we were just as much in the dark as our non-progressive friend.

Referring again to the subject, Fig. 2 is a card taken from the high-pressure cylinder of a cross-compound engine which shows that the valve has too much lead. The admission line *A-B* runs up to full boiler pressure before the stroke has terminated. This shows we are wasting energy in compressing steam that should be used to force the piston in the other direction. On a slide-valve engine this defect can be remedied by moving the eccentric backward, or contrary to the direction in which the main shaft turns. On a Corliss or other four-valve engine, adjusting the reach-rods in a manner to make the admission later will sometimes correct the fault. These rods are provided with right and left threads which enable the engineer to change their length.

The grid-iron type of valve with riding cut-off, like the Corliss, may have all the events changed without moving the eccentric, if the eccentric rods are adjusted to stroke the right distance. The adjustments of the latter type of valve are made by screwing the valve rod in or out of its cross-head. It will be helpful to the student to remember that the eccentric is nothing more than a crank in a modified form. If it were possible to have a crank of such size that its throw, or radius of the circle in which it travels, would not be greater than that necessary to give the valve the proper travel, and this small crank could be arranged without in any manner impairing the strength of the shaft, then it would be more convenient to provide a crank on a small scale to move the valve. So it is obvious that the eccentric bears the same relation to the valve that the crank does to the piston. An understanding of this fact will enable one at all times to tell very nearly the position of the valve by the way the eccentric stands.

FORM [illegible]

Engine No.............Date.....................190..............end. Series.......... No.______

H. P.......... Scale.......... Rev........... Steam.......... lbs. Vac.......... in. Rec........... lbs. Amp.______

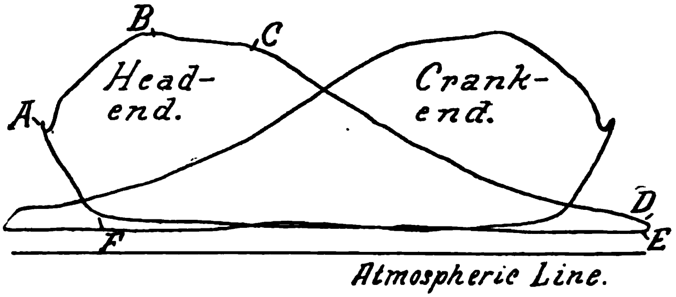


Fig. 3

It will be noticed in Fig. 3 that we have the opposite extreme to that in Fig. 2. In this case, it is shown that the valve does not open for admission until the piston has traveled a portion of its stroke. This defect is corrected by doing just the opposite of what was directed in the case described in Fig. 2. To be more explicit: Moving the eccentric so as to give the ports the desired opening when the piston is at the end of the stroke will correct this fault. It will be understood that the amount of lead given will depend on conditions, such as speed, size of cylinder and steam ports.

The effect on the economy of an engine with "negative" lead or late admission offers quite a field for discussion, but it appears it would have the same effect on steam consumption as a large and unnecessary amount of clearance.

Our next events on the card will be the steam line, cut-off and expansion.

John Burns.

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Questions and Answers on the Pyle National Electric Headlight

By J. Will Johnson

Question 130.—How is the armature made to revolve?

Answer.—The armature is made to revolve by being attached to the engine shaft.

Q. 131.—Is the armature connected directly to the engine shaft, or secured thereto through the medium of a coupling device?

A.—The armature of this device is connected directly to the engine shaft.

Q. 132.—What great advantage is obtained by having the armature connected directly to the engine shaft?

A.—When the engine and armature are connected to the same shaft, the difficulty of setting them in line with each other is avoided, as is necessary when a special coupling device is used.

Q. 133.—How is the armature held in place on the engine shaft?

A.—The armature is held in place by one screw, which can be easily removed if occasion demands.

Q. 134.—How many brushes are used with this dynamo?

A.—Two.

Q. 135.—Can the position of brushes be shifted on the commutator?

A.—No. The brush holders are rigid.

Q. 136.—Then it is not possible for the brushes to lose their polarity?

A.—No.

Q. 137.—Can the brushes be taken out and replaced, or trimmed, without changing the tension of the springs?

A.—Yes.

Q. 138.—How many styles of brush holders are there in use on the Pyle National dynamos?

A.—There are two styles of brush holders in use at the present time. One with the flat straight bar spring, which is the old style, the other being a coil spring.

Q. 139.—How is the brush adjustment made with the old style holder?

A.—With the old style holders, brush adjustment is made through the medium of adjusting screw *110.*

Q. 140.—Can the brush tension be changed at will of the engineer?

A.—Yes, but with the old style brush holders only.

Q. 141.—Why can the pressure on the brush with the new style brush holder not be changed as readily and easily as the tension on the brush using the old style holder?

A.—The new style brush holder is designed and supplied with a coil spring and the spring is set or fixed with a predetermined pressure upon the brush, such that will maintain sufficient pressure upon the brushes to prevent sparking until brush is worn out and the tensions of these springs can not be changed without first removing adjuster screw and spring adjuster, and this can only be accomplished by the aid of a heavy screwdriver.

Q. 142.—Why was it found necessary to adopt this style of brush holder?

A.—To reduce the sparking of brushes to a minimum.

Q. 143.—What is usually the cause when sparks are seen at the brushes?

A.—When sparks are seen at the commutator of this device it is almost invariably because of an imperfect contact between the commutator and the brush.

Q. 144.—Explain why an imperfect contact between brush and commutator will produce sparks between these points.

A.—Electricity will flow through a copper conductor with more than a million times less resistance than is offered by its passage through the air, and travels at the rate of about 186,000 miles per second. When a quantity of electricity is concentrated by the armature and then driven through its conductors by the pressure or voltage, and in its passage should arrive at a point where more than a million times greater resistance was offered than in its passage through the copper conductors (such as when the brush does not touch the commutator firmly), and the pressure (voltage) while sufficient to force this electricity across and through this point of *great* resistance created by this imperfect and improper contact between brush and commutator, you will have sparks produced.

Q. 145.—With the old style brush holders, when sparks are seen at the commutator, what should be done?

A.—It should first be known that the commutator is clean and free from dirt. If clean and sparks are seen, the brush that is "sparking" must be tightened only until sparks are no longer seen. This is accomplished by turning adjusting screw *110* to the right.

Q. 146.—With the new style brush holder, if sparks are seen at the brushes what should be done?

A.—When sparks are seen at the brushes when the new style brush holder is used it is almost invariably caused by dirty commutator or brush, and the dynamo should be stopped and the commutator cleaned.

Q. 147.—What would you recommend that the commutator be cleaned with?

A.—The commutator should always be cleaned with a damp cloth, or piece of waste, rubbing the commutator lengthwise of bars, and after washed clean, then dry with a clean cloth or piece of waste.

Q. 148.—If after commutator is cleaned with damp cloth it still sparks, what should be done?

A.—If brushes are clean, sparking is then produced by an imperfect contact between the brush and the commutator, and they must be cleaned with a piece of number "0" sand paper.

Q. 149.—How would you clean the commutator with sand paper?

A.—When it is desired to clean the commutator with sand paper both brushes must be removed. Take a strip of number "0" sand paper about the width of the brushes, holding sand paper by the ends while the commutator is running, working the sand paper back and forth lengthwise of the commutator so as to cover the entire surface until commutator is perfectly smooth.

Q. 150.—After the commutator has been cleaned with sand paper, what should then be done before the dynamo is operated?

A.—The brushes should be cleaned and fitted to the same contour as the commutator, and the commutator wiped perfectly clean and free from grit.

Q. 151.—How are the brushes fitted?

A.—When it is desired to true up a set of old brushes or apply a new set, a strip of number "0" sand paper should be used the same as when cleaning commutator, but do not run the dynamo when fitting and truing up brushes. The sand paper should be placed on the commutator with the rough side up, or against the brush, then pull sand paper through and under brush in direction of the rotation of the armature until brush is fitted to and has the same contour as the commutator.

Q. 152.—Why should the sand paper be pulled through under the brush in direction of the rotation of the armature?

A.—By pulling the sand paper under the brush in this direction the brush is drawn over against the side of the brush holder where it is carried by the rotation of the armature, and this insures a perfect bearing when dynamo is in operation.

Q. 153.—If the brush pressure against the commutator is too heavy, what will result?

A.—If the brush bears with too much pressure against the commutator it creates heat by friction and unnecessary wear to both the commutator and the brushes.

Q. 154.—What is the correct pressure of the brush against the commutator?

A.—Correct pressure is attained when the brushes collect the full strength of the current without sparking, while the pressure upon the commutator is just sufficient to overcome any vibration due to its rotation or the jar of the locomotive.

Q. 155.—Why is end thrust or end movement given to the shaft of this device?

A.—End movement is given to this device to prevent grooving or scratching of the commutator.

Q. 156.—Why is the commutator more liable to be scratched if there was no end movement to the armature and shaft than when end movement is given?

A.—If shifting of the commutator and brushes was not allowed, the hard spots that are always found in carbon brushes would soon cut and scratch the commutator until it might become useless and the dynamo would refuse to build up.

Q. 157.—Name another cause that would prevent the brushes from touching the bars of the commutator?

A.—Each commutator bar is separated from the other by a piece of insulation, known as mica. This mica is much harder than either the brush or the copper bars of the commutator, and will not wear away as rapidly as the brush or the copper bars, and after the machine has run for a time these insulations will project above the surface of the copper bars and will prevent the brushes from touching the commutator all the time and will thus produce sparking.

Q. 158.—How is the mica prevented from interfering with the contact between the brush and the commutator?

A.—The mica is cut or filed out until it is about 1-64 of an inch below the surface of the commutator to prevent interference with perfect contact between the commutator bars and brush.

Q. 159.—Why should great care be used when cutting or filing the mica down to avoid increasing the width of the groove between the copper bars?

A.—The grooves between the commutator bars fill up rapidly with dirt, carbon dust, etc., and the deeper or wider the groove the more dirt could be collected, which would make it easier for a short circuit to be created across your commutator bars.

Q. 160.—If the grooves are not kept clean, what would result?

A.—If the grooves are allowed to fill up with dirt and not cleaned out a short circuit will soon result in your commutator.

Q. 161.—After filing or cutting the mica down, what must always be done before the dynamo is operated?

A.—In filing the mica down, a slight burr will be raised on the edge of the copper bar which must be removed before the dynamo is placed in operation.

Q. 162.—How is this burr removed?

A.—By using sand paper and employing same method as when truing commutator up with sand paper.

Q. 163.—Why is it necessary to clean out the grooves between the commutator bars very carefully always after sand paper has been used about the commutator or brushes?

A.—If the commutator was not thoroughly cleaned after sand paper had been used upon it, the small particles of sand that may have been deposited in the grooves will get between the brush and the commutator when the dynamo is started and will cause sparking.

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Questions and Answers on Steam

By W. L. French

Question 1.—When water is evaporated by the application of heat, what is formed?

Answer.—An invisible gas, called steam.

Q. 2.—Is there any common experiment that will prove steam to be invisible?

A.—Yes. A tea kettle containing water boiling fiercely will show nothing close to the spout's end, but a short distance from it vapor can be seen. The real live steam is that portion of the jet extending from the end of the spout to where the vapor is visible. The same conditions can be sometimes observed in connection with the escape of steam, from cylinder cocks, particularly on a hot day.

Q. 3.—What gives steam its power?

A.—Heat, and confining it in a given space.

Q. 4.—How is this power utilized?

A.—By making use of the property of heat and gas to expand when given an opportunity.

Q. 5.—Into what classes may steam be divided?

A.—Wet, saturated, superheated, and dry steam.

Q. 6.—Describe them.

A.—Wet steam is steam carrying a considerable number of water atoms entrained with it. Saturated steam is where no moisture of any amount is held in suspension by the steam. Superheated steam is steam heated to a high degree before being transmitted to the cylinder for use. In locomotive practice this is accomplished by running the steam through a coil of pipes located in the smokebox, where it absorbs heat that would be otherwise wasted, and is in close connection with the cylinder. To superheat steam it must be removed from contact with the water. Dry steam is steam free from moisture.

Q. 7.—At what temperature does the change from water to steam occur?

A.—At 212 degrees Fahrenheit. At the sea level, atmospheric pressure of about 15 pounds per square inch.

Q. 8.—How does the temperature vary?

A.—With the pressure. In an open vessel water will evaporate at 212 degrees; at a higher altitude where the atmospheric pressure is less it will be evaporated at a lower degree of heat, and if one could descend toward the center of the earth a greater pressure would be found and higher temperature must be developed to make steam.

Q. 9.—The amount of heat necessary to change water to steam must be greater with a high pressure than a low one?

A.—Yes.

Q. 10.—Where is the pressure greatest in a locomotive boiler?

A.—In the water-legs, where the pressure of the steam and the weight of the water are both present.

Q. 11.—What steam pressure indication does the steam gauge of a locomotive give?

A.—The steam pressure above the atmospheric pressure.

Q. 12.—In what portion of the boiler is steam first generated?

A.—At the firebox sheets, where the application of heat is most direct. In fact, the greater part of the steam generation takes place about the firebox, the flues contributing to the result in a minor degree.

Q. 13.—How does the steam pass to the surface of the water and escape?

A.—On account of its lightness from heat, it rises in the form of bubbles which explode on reaching the surface, releasing the steam. As the water evaporates below and rises as steam, the cooler water from above settles down to replace it. The supply in a boiler would soon be exhausted if it was not replenished.

Q. 14.—Will the temperature of steam in an open vessel rise above 212 degrees?

A.—No. For it is released as soon as made.

Q. 15.—In a confined space, as in a boiler, how does the temperature vary?

A.—With the pressure.

Q. 16.—What property has steam along with other gases?

A.—That of expanding and filling space.

Q. 17.—How is this property utilized in using the power of steam?

A.—By confining it until a desired pressure is obtained, and then allowing it to escape only in such a manner as will compel it to do certain work before it is free.

Q. 18.—What is the pressure dependent upon?

A.—The strength of the boiler containing the steam. The pressure is always placed far below what is considered to be the point of safety from explosion of a boiler, as explosions are very costly and undesirable affairs.

Q. 19.—How does steam do its work?

A.—By being admitted to the cylinders against the end of the pistons, which act on the drive wheels by means of main rods. The steam admitted to the front end of the piston forces it back until a port, called the exhaust port, is placed in connection with the front end of the cylinder when the steam escapes, the supply of steam to the front of the cylinder being cut off by the advance of the valve and the supply transferred to the rear of the piston.

Q. 20.—How does the pressure against the piston decrease with its travel?

A.—Inversely with the space or volume it expands to fill.

Q. 21.—Explain this.

A.—If a cylinder was 26 inches long and steam was admitted for one-half the stroke at a pressure of 100 pounds per square inch and the supply is then cut off, when the piston has reached the end of its stroke the space occupied by the steam would be twice as great and the pressure would be diminished one-half, that is, it would be 50 pounds per square inch at the completion of the stroke.

Q. 22.—How can you determine the absolute pressure at any point in the stroke or at its completion?

A.—Multiply the absolute pressure by the length of the cut-off and divide by the length of the stroke, or at any point of the stroke beyond the cut-off that may be desired. Thus, 140 pounds pressure × 8-inch cut-off = 1,120, which, ÷ 26, the length of the stroke, gives 43 pounds per square inch as its pressure at completion of the stroke.

Q. 23.—How can one find the effective pressure?

A.—Deduct the atmospheric pressure from the absolute pressure and it will give the effective pressure.

Q. 24.—What does a loss of heat involve?

A.—A loss of power, which is a financial loss the same as a loss of heat in combustion is a money loss. In the former case it is active power, in the latter latent.

Q. 25.—How may this loss of heat occur?

A.—In three ways; by radiation, convection and conduction.

Q. 26.—What is radiation of heat?

A.—The giving off of heat by rays the same as the sun transmits heat to the earth.

Q. 27.—What is conduction?

A.—The passing of heat along a metal. Firemen are aware how the handle of a slash bar will heat from the end in the fire by conduction when removing clinkers from the firebox.

Q. 28.—What is convection?

A.—It can be observed best in the heating of water. The particles of water nearest the fire becoming first heated rise to the surface and the colder water from above replaces it. It is a form of circulation brought about by the action of the heat.

Q. 29.—Is the degree of conduction in all substances the same and dependent only on the degree of heat to which they are exposed?

A.—No. There is a great variation in the conducting power of different substances.

Q. 30.—How is this knowledge utilized?

A.—To prevent a loss of heat to boilers by covering the exposed parts with some good nonconducting material. Asbestos, or wood, covered with Russia iron, is the material most used.

Q. 31.—In addition to the element of safety introduced into boiler building by allowing a wide margin between the pressure carried and the tensile strength of the iron, what other precaution is adopted?

A.—Frequent stay-bolt and boiler tests are made by hammer and water pressure.

Q. 32.—What prevents the pressure rising beyond a certain point?

A.—Valves, called safety or pop valves, adjusted to a certain pressure by springs, and whose under surface are acted upon directly by the steam which lifts them from their seat when the pressure in the boiler exceeds slightly the resistance of the springs. There being two of them, there is practically no danger that both would be out of order at the same time.

Q. 33.—What pressure is a boiler supposed to stand without giving away in any portion?

A.—One-fifth of the tensile strength of the boiler plate.

Q. 34.—If the tensile strength of a square-inch of cross-section of boiler plate is 50,000 pounds, why is it necessary to allow only one-fifth of that, or 10,000 pounds?

A.—Because of the weakening effect of seams, stay-bolt holes, hand-hole plates, wash-out plugs, and the like on the boiler sheet. Then there is the pitting of the sheet by the action of the water, and the wear and tear incident to service for which to allow.

Q. 35.—What is the usual cause given for boiler explosions?

A.—Low water.

Q. 36.—What is the true cause?

A.—Inability of the metal to withstand the strain put on it from within.

Q. 37.—To what other causes are they sometimes attributed?

A.—To cold water being pumped on to a hot sheet, thereby generating suddenly a powerful gas which rends the boiler plates. Also to the violent opening of a valve, causing a sudden rush of steam, lifting the water and causing the shell of the boiler to collapse.

Q. 38.—Are these theories well supported by facts?

A.—No. They are often used to shift the responsibility from the man to blame for the disaster to the man, who, being killed, is beyond the reach of blame. With low water the sheets may be heated to the melting point, or so that the softened sheet would pull over the bolt heads, but then the chances are for a rupture of the sheet and not a boiler explosion. Cold water admitted might damage a sheet by a too sudden cooling, but that is about the worst that happens, *for the water comes in at the front of the boiler and is warmed to a certain degree before it reaches the firebox sheets.* Heat a piece of boiler iron a foot square red hot, and see how hot it will make just one pail of cold water and how much steam it will generate, and draw your own conclusions as to the rest. Opening a valve wide might cause a sudden change of pressure that would damage a boiler, but not enough to cause an explosion.

Q. 39.—What is the difference between a rupture of a boiler and a boiler explosion?

A.—A rupture is the gradual giving away of any portion of the boiler. An explosion is a violent rending of the parts when the whole shell is damaged to a greater or less degree.

Q. 40.—Is there usually any prior indication of the giving away of some part of the boiler?

A.—Yes. Bagging or blistering of the sheets, cracks in their surface, stay-bolts and braces breaking, and frequent leaking of seams from one sheet bulging out from the other.

Q. 41.—How can these defects be discovered?

A.—By a careful inspection by a competent mechanic.

Q. 42.—Is testing a boiler by a very high pressure, one much beyond that which it usually carries, a sure sign that the boiler is perfectly safe?

A.—No. Everyone has observed a rope that withstood a great strain one day yield to a lesser one the next. Yet the test is a good one and might save trouble. There may be an inherent weakness in a boiler plate that can not be discovered and that will one day cause disaster. A side rod often shows no defect but suddenly parts.

Q. 43.—From what part of the boiler is the steam transmitted to the cylinders?

A.—From the steam dome located on top of the boiler.

Q. 44.—Why is it taken from the dome?

A.—Being the highest point in the boiler containing steam, it holds the least water in suspension, and the drier that steam can be supplied to the cylinders the better, as damp steam requires more valve and cylinder lubrication and is not so efficient for doing work.

Q. 45.—Is a high boiler pressure a safe indication of dry steam?

A.—No. The pressure may be high or low and the steam dry, or the opposite. More saturated steam is used than perfectly dry steam in locomotive practice.

Q. 46.—Does a boiler make steam best with a high or low water level?

A.—With a high water level, on account of the latent heat in the larger body of water.

Q. 47.—Why not carry a high water level at all times?

A.—Because the water passes with the steam into the dry pipe and is injurious to the valves and cylinders.

Q. 48.—Is all the power in steam utilized before it is exhausted to the atmosphere?

A.—No. The compound locomotive is designed to utilize a part of this waste, but owing to frequent failures in service they have not come into general use.

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SOUTHERN PACIFIC RAILROAD DEPOT, SACRAMENTO, CAL.

(Photo by Bro. B. Dee, Lodge 5)

Movement of Trains

By H. A. Dalby

Surprise Checking.

This subject has received considerable attention of late. It has been discussed among men of every grade in the service from president down to station men and those in charge of trains. It has had its supporters and its opposers. It has been regarded with favor by some and looked upon with contempt by others. Like many other things it is not fully understood, and when a thing is not understood it is very likely to be misjudged. The intentions of those responsible for its use are also misunderstood and misrepresented. We can not refrain from expressing some observations from the standpoint of those who are checked rather than those who do the checking, but in order to do this justly and correctly we must put ourselves in the place of "the other fellow."

This method of checking, or, more properly, testing, while not of very recent origin, doubtless has become more extensively employed in recent months as a result of numerous accidents, some of which were traceable to a lack of proper observance of signals and other failures in the line of duty. Other causes, of course, have contributed to these distressing results and causes quite as blameworthy, but those due to human fallibility or negligence are the ones which it is hoped to bring nearer to perfection by a system of surprise tests.

Every intelligent person knows that from all quarters the railroads are being severely scored, and in no charitable terms, for the accidents in which lives have been lost and property destroyed. Newspapers throughout the country and individuals without number have offered remedies of every grade of practicability. Every conceivable cause has been assigned, from the greed of the capitalist who refuses to spend money in the interest of safety, to the alleged criminal negligence of the engineer who deliberately runs into a block section at full speed when he knows he is following closely another train ahead. Such observers usually show their capability, or lack of it, of treating the subject in hand, and, while unjust accusations have been abundantly showered upon the heads of those concerned, the fact is that their opinions have been widely read, to a certain extent have been believed, and have had their effect on the minds of those having no technical knowledge of the conditions. The railroads as a whole have shouldered the blame. When these things come to the ears of the president he sends for the general manager. The latter calls in the general superintendent, and he the division superintendents. They pass it on to the trainmaster, master mechanic and traveling engineer, and so on down the line, each with positive injunctions to see that conditions are improved, or tell the reason why. Every phase of the question is thoroughly sifted, and, among others, the matter of observance of rules in general and obedience to signals in particular. This has led to the system, so called, of surprise tests, which some of us have been disposed, at first thought, to regard with disfavor.

The writer knows whereof he speaks when he approaches the subject of detective work among employes. He knows what the character of that work has been in some cases, and he also knows the character of some men who have engaged in it. When the spirit of justice is lacking he knows some of the results. But in order to form an unbiased opinion with regard to its use we must consider the principle which actuates it and the spirit in which the service is performed. In thus considering the matter we can not do better than to quote the utterances of the general manager of a large system where the practice has been rigidly enforced for more than two years.

He says "surprise tests" is the wrong name for it. There is no surprise about it. It is simply a test, as many another person or other line of work is tested. Before the plan was inaugurated a circular letter was addressed to each man in the train and engine service, urging him to increased diligence in the observance of all rules in which the safety of trains was involved, and stating that a rigid inspection to this end might be expected. The general manager himself went over the system, stopping at division and district terminals, meeting the employes, and talking personally with them in regard to avoiding the troubles that had come to other roads and other men. He asked them if there were any rules that were unnecessary or unjust, and said if there were they would try and find a remedy. He insisted that the rules be rigidly obeyed and told them emphatically that the man who refused to obey could not work for the company. He asked if this was fair, and apparently they all agreed that it was, not only to the company, but to the public and the men themselves, especially those who did obey. He told them that they would be watched, but those who were faithful and honest in their work need not be in the least disturbed, and from all that can be learned the same spirit of fairness has prevailed in the subsequent pursuit of the plan.

The usual practice is for the trainmaster or some other authorized person to place himself near a fixed signal and observe whether it is obeyed by trains if in the "stop" or "caution" position. Occasionally it has been purposely changed to "stop," and the way it is regarded by passing trains is carefully noted. The observance of fixed signals is not the only thing that is watched. The sounding of the whistle and the ringing of the bell for road crossings, the observance of torpedoes, fusees, etc., also the manner in which the flagman protects the rear of his train, come within the scope of these tests. The mode of displaying markers and other train signals is also watched at times unknown to the men in charge. In fact, the inspection embraces the observance of every rule a violation of which may involve the safety of trains.

There is every evidence that in carrying out this system of inspection there is nothing but the best of good will from the management toward the employe. There is no desire to get him into trouble, but rather to keep him out of it. No one wants to get him out of his place, but, on the contrary, to keep him in it. The general manager to whom reference has been made said that he wanted his employes to be the best railroad men on earth, and spoke with evident satisfaction of a report that had just been handed him covering the operations for a month, in which it was shown that the most important division of the system had a standing of 100 per cent., which meant that not one case of negligence or oversight had been discovered during that time. When the higher officials express pleasure at such a report it may be easily guessed how they regard the plan.

Testing men employed in train service may reasonably be compared to similar practice in other lines of work. A station agent does not feel that the traveling auditor is trying to get him into trouble because he comes unexpectedly to check his accounts, nor does the cashier of the bank take it as a reflection on his honesty when the State examiner drops in some morning and asks to see his books and count his cash. If it serves to make men more watchful it should be looked upon as a kindness, for when trouble does occur the man who was the cause of it is by no means the smallest sufferer. In regard to watching the observance of signals, it is said that some engineers have urged it, feeling that those who are obedient should be known and receive credit, just as those who are less careful should be discovered and take the blame.

It may be interesting to know that employes of English roads have for years been under inspection far more rigid than has been attempted in America. There is a large number of men employed who do nothing else. One large English system reports a corps of inspectors numbering more than the miles operated, which is to say that there is more than one inspector for every mile of track. So familiar is this practice to English railroad men that they grow to watch each other and promptly report to headquarters any infraction of the rules, no matter how small. In some cases small rewards are paid for such reports. An instance is related of a guard who was standing at his train on the platform of a terminal station, when a passenger requested him to walk a few steps to call a newsboy. He did so, and was promptly reported by the station master for leaving his post of duty. The mind of the American railroad man would rebel at the thought, but it serves to demonstrate that watchfulness of others may be practiced without any unkind intention, but only as a matter of daily duty.

On the American road to which we have referred enginemen are especially cautioned against reckless running and attempts to make fast time under conditions that will not warrant it. It is said that in the cab of every engine the words "Safety before speed" are to be painted in bright letters, so that the engineer can constantly see them.

It will do us no harm, in connection with this subject, to ask what really is the cause of wrecks. We mean those that are due to human shortcomings. Possibly the individual may strengthen his own position by such inquiry. We may suppose that each case in which the human element is responsible may be placed in one of three classes: First. forgetfulness or oversight; second, carelessness or taking chances; third, absolute violation of rules or willful neglect in taking proper precautions. For the third nothing need be said, and for the second but few words will suffice. One who willfully does wrong can not reasonably hope for leniency, and one who does not take every precaution to be sure he is right is almost in the same category. What we shall say will be in regard to the first class—those who forget.

For one who forgets we have the greatest sympathy, providing he is making an honest effort to avoid it. The most careful of men will occasionally fail, and the only advice that can be offered is to try to train the mind to remember the right thing at the right time. One important factor in so controlling the mind is that it be free from all disturbing thoughts and influences. A division superintendent once said that if men could confine their thoughts entirely to their work, that the number of accidents would be less. If on account of other business affairs or family troubles the mind is so disturbed as to invite the possibility of oversight, it would be advisable to not attempt to work while under such pressure. He said on his division they tried so far as possible to keep the minds of those concerned in handling trains free from disturbing thoughts. They kept a watch on their men while they were off duty, not for the purpose of unjust interference with their personal liberty, but with the end in view as above indicated. In all the various phases of self-culture there is nothing of more importance than the art of mind control, which is a necessity in the work of handling trains, and when mastered pays for itself many times over in accuracy and correctness of performance. This fact is not fully appreciated until forced upon us by a distressing lack of it, when the memory fails at some critical moment and an accident, more or less serious, is the result.

Manual Blocking.—Arrangement for Leaving Siding.

In every block signal system there must be some arrangement for a train to obtain permission to resume the main track after being on the siding to allow another train to pass. When the train stands near enough to the signal tower or office that it can receive this permission in the usual way there is no difficulty, but when the outgoing switch is not within working distance of the signalman's office some special arrangement must be provided. This is sometimes accomplished by means of electric bells between the signalman's office and a point near the switch. In other places, as on the Baltimore and Ohio (see October Magazine, page 511), the telephone is used. In still others there is a clever device by which the switch, although operated by the trainmen, is controlled by the nearest signalman, and can only be opened when he unlocks it. An arrangement of this kind, as well as a splendid location of sidetracks, is found on certain double-track divisions of the Southern Railway. A typical station arrangement on this road is shown in Fig. 1.

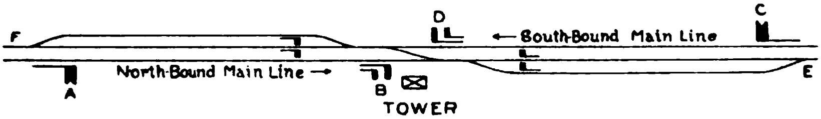


Fig. 1. Sidings at Block Station

It will be seen that the entrance to the siding from either the north or southbound track is near the signal tower, and this entrance switch, as well as the crossover which extends between the two main tracks, is operated by the signalman.

For trains passing through on either main track the distant and home signal (*A* and *B* or *C* and *D*) are the only ones that govern. If these two signals stand at "proceed" they indicate that the three switches ahead are closed and locked. If they are not all closed and locked these signals can not indicate "proceed." For all other movements dwarf signals are used. One will be seen at the base of signal *B* and a corresponding one at signal *D*. They stand normally at "stop," but indicate "proceed" when the switch is open for a train to enter the sidetrack, the switches and the signals being moved by the operator or signalman. These dwarf signals are interlocked with their corresponding high signals, and, as one controls the main track and the other the siding, it is arranged that when one is cleared it locks the other at "stop." At night when the low signal is in the stop position its light is blinded, so that the engineer of a train having the main line route will see no red lights—nothing but the clear signals for the main track.

For trains backing through the crossover, either from the main track or the siding, dwarf signals are located as shown in Fig. 1, being located on the right of the train in the direction in which it is to move. All the switches and signals above described are handled by the signalman in the tower. The outgoing switches of the sidings and the signals which control them (*E* and *F*) are moved by the trainmen, but are so interlocked and controlled by the signalman that they can not be used unless released by him.

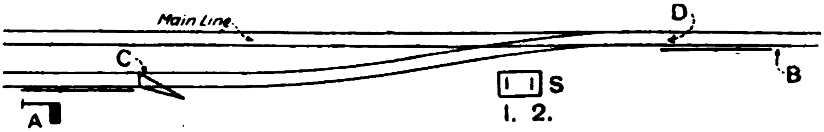
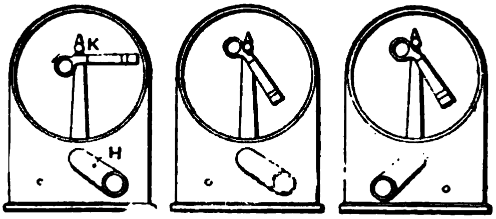


Fig. 2. Outgoing End of Sidetrack



Figs. 3, 4 and 5. Indicator at Switch

There is a small interlocking plant at each of these outgoing switches. A plan of the tracks and appurtenances is shown in Fig. 2. A small cabin (*S*) is provided for the switch levers, which are numbered *1* and *2*, and which move the switch, the detector bar (*D B*), the derail (*C*) and the dwarf signal (*A*).

In connection with the switch levers there is a small iron box which contains the locking arrangement, and also an indicator in the form of a small semaphore, the different positions of which are shown in Figs. 3 and 4. A cover is made to fit tightly over the dial of the indicator, and this not only protects it from dirt, but plays a part in the locking arrangement. There is also a small knob or handle which must be placed in the proper position before the switch can be opened.

Printed instructions are issued to employes explaining the use of the apparatus. To begin with, the train must be stopped before reaching signal *A*. When a train wishes to leave the siding the first thing to do is to remove the cover from the dial and observe the position of the indicator (the small semaphore). There must be nothing done until the semaphore is dropped to "clear," as in Fig. 4. When it assumes this position the locking handle *H* (Fig. 3) must be moved to the left (Fig. 5). This motion unlocks lever No. *2*. Then lever No. *2* is pulled, opening the switch, and at the same time unlocking lever No. *1*. Lever No. *1* is then pulled, which closes the derail (*C*) and clears the signal (*A*), after which the train may proceed. When it has cleared the detector bar (*D B*) the process of handling the levers is reversed. No. *1* is returned to the normal position, which sets signal *A* at stop and opens the derail, then lever No. *2* is put back, which closes the switch and locks lever No. *1* in its normal position. The cover must then be replaced on the dial of the indicator, but can not be done until the locking handle is first turned to the right, which is its normal position, and which locks everything at normal, i. e., for the passage of trains on the main track.

A switch equipped as above described must be used only in leaving the siding. Trains wishing to enter must do so at the other end.

Questions and Answers

Locomotive Running and Repairs.

Answers by W. G. Wallace.

353. **Burned or Broken Grate.**—"How would you manage with a burned or broken grate? How if entirely gone, with deep ashpan?"—*H. B. A.*

Answer.—If a grate was broken you might be able to block up under it so as to bring in your train. But it is usually better with a grate burned, broken or entirely gone, to place angle bars across the space to keep coal from falling through into the ashpan. Keep the ashpan clean and you will be reasonably free from grate troubles.

354. **Grease Cellars on Driving Boxes.**—"With an engine equipped with grease cellars on driving boxes, how would you know there was sufficient grease in the cellar to make the trip, and if it needed packing out on the road, how would you proceed to pack it?"—*H. B. A.*

Answer.—If you will observe closely you will find that there are two indicators that are attached to the follower plate and extend through the bottom of the cellar, and are for the purpose of indicating the amount of lubricant in the lubricator or grease cellar, and also to show that the grease is being fed to the journal, front and back. When the top part of the ring on the indicator is flush with the bottom of the cellar, it is then time to have it repacked. Examine this before you leave the terminal, but do not get uneasy, as they only have to be repacked every 30,000 to 50,000 miles. If you need to pack a cellar out on the road you can easily accomplish it by removing the end plate on the cellar, which is held in place by two small bolts. Then insert hooks in the eyes of the indicators and pull them down as far as you can: secure them in that position and you will find that the follower plate will be flush with the lower edge of the opening in the end of the cellar. A cake of lubricant or grease should be about one inch thick and two and one-half or three inches wide, and cut in length to fit inside of cellar. Place the first cake to one side of the cellar on top of the follower plate, and the second to the opposite side, then fill the space in the middle with a third piece, put on the end plate, release the indicators and the spring will force the grease up to the journal and you are ready to go.

If you anticipate a job of this kind, have the cakes of lubricant ready, firmly packed, of the right size and free from dirt.

355. **Testing for Broken By-Pass Valve.**—"If a by-pass valve was broken, how would you test for it?"—*H. B. A.*

Answer.—The piston valve can not raise from its seat to relieve the pressure in the cylinder when the valve has covered the port, hence the necessity of a means of relieving the pressure. The by-pass valve is placed between the live-steam chamber and the admission port, and located in a case that is bolted to the cylinder casting. When steam is admitted into the steam chamber between the pistons of a piston valve, if inside admission type, the by-pass valve is held to its seat by the pressure in the steam chamber. But when the pressure in the cylinder is greater than that in the steam chamber, the by-pass valve is raised from its seat and permits the steam to flow from the cylinder into the steam chamber, relieving the pressure in the cylinder in this manner instead of allowing it to escape to the atmosphere, as it would if a relief valve was used on the cylinder head.

To test for a broken by-pass valve, place the rocker arm plumb. This should cover the ports. Then open the cylinder cocks and the throttle. Steam will flow past the broken valve and out of the cylinder cock at the end of the cylinder the broken by-pass valve is on. If blow will prevent your handling train properly to terminal, take off by-pass valve case and insert blind gasket between by-pass valve case and cylinder casting. In some cases you may be able to block the valve in position by removing cap.

356. **Broken Driver or Trailer Spring, Hanger or Equalizer.**—"How would you proceed to block up for a broken driver spring, spring hanger or equalizer on a class D engine; how for a broken trailer spring or hanger? The class D is a Northwestern type."—*H. B. A.*

Answer.—For a broken front driving spring, run front driver up on a wedge, then pry up the front end of the equalizer nearest to the broken spring until it is in about normal position and place a block either between the front end of the equalizer and the lower bar of the frame, or between the back end of the equalizer and the top rail of frame. This gives the use of the main driver and trailer springs. Now run the front driver off the wedge and the back driver up on the wedge, and block between the top of the front driving box and the frame so the front driver will carry its load, remove or secure broken parts.

If equalizer broke between the front and back drivers, raise up engine with jacks or in any other manner, and block between lower hanger pins and the bottom of the top rail of the frame.

When a trailer spring breaks it allows the end of the cross equalizer nearest the end of the broken spring to drop into the safety hanger. First jack up the end of the cross equalizer into position and place a block in the U-shaped safety hanger to hold it until you are ready to remove it. Now raise the back end of the engine frame so she will ride level, remove the broken spring and take a tie or a piece of rail and place it over the trailer box and chain front end to the cross equalizer, and the back end to the frame and hanger pin, remove the block from the safety hanger under the cross equalizer and let the usual load come on the trailer box.

If a front hanger on a trailer spring should break, raise the back end of the engine on the disabled side so as to relieve the trailer spring, then jack up the end of the cross equalizer next to the broken hanger, pry down the front end of the trailer spring and securely chain the end of the spring to the end of the cross equalizer.

If a back hanger on trailer spring is broken, raise the back end of the engine and also jack up the end of the cross equalizer to relieve the spring, then pry the back end of the spring down and chain it so it will not work off the hanger pin.

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357. Guides and Cross-head Not in Line.—"What would be the result if guides and cross-head were not in line?"—*H. B. A.*

Answer.—Excessive wear on sides of cross-head and guides, unequal wear in cylinders and cylinder packing rings, difficulty in keeping piston rod packing from blowing and wearing out rapidly, and trouble with main rod brasses, especially in the front end of main rod.

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358. Superheated Steam.—"What is superheated steam?"—*H. B. A.*

Answer.—Superheated steam is steam heated to a temperature above that due to its pressure. The temperature of steam in contact with water depends on the pressure under which it is generated, as shown in steam tables, while superheated steam is at a higher temperature.

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359. Method of Superheating Steam.—"How is steam superheated, and what benefits are derived from it?"—*H. B. A.*

Answer.—Steam is superheated by passing through a system of pipes or coils that are placed in the smokebox for this purpose, and the steam in passing from the boiler to the cylinders absorbs the heat from the smoke and gases as they are drawn through the flues and stack, thus increasing its temperature. Superheated steam therefore gives a higher efficiency of the engine, as there is less loss of heat by condensation when it comes in contact with the walls of the cylinders. There are many types of superheaters, and the usual benefit derived from their use is claimed to be about 13 per cent. higher efficiency.

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Train Rules and Train Practice.

Answers by H. A. Dalby.

189. 24-Hour Schedules.—"Will you kindly explain in connection with time table question No. 185 in the October number what No. 1 at B would do if the schedule were in effect for 24 hours, instead of 12? On the C., M. & St. P. trains hold their rights for 24 hours. In this case could not No. 1 of the 17th proceed if they could keep less than 24 hours late?"—*W. B.*

Answer.—There are very few roads whose rules authorize 24 hours as the life of a schedule, and we have never known a place where the 24-hour rule was used in connection with the "date" principle, as described in the answer to Question 185. All the consideration we have given the "date" principle has been in connection with Standard Rule No. 82, by which a schedule dies when it is 12 hours late. We should say, however, that it could be applied in the same way and that in a case like the one described in Question 185, No. 1 of the 17th could assume the schedule of that number and date and continue to run until it became 24 hours late. No. 1 of the 18th, as stated in the October number, would be due to leave A at 12.35 a. m., the 18th, 30 minutes after the time-table takes effect, making it possible for the train of the 17th and the train of the 18th to be but a few minutes apart. Even this would not lead to any confusion, as the date of each train would be understood by all concerned.

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190. **Beginning a New Run.**—"Will you kindly favor me with your opinion on a question which has been under discussion with some of our men? The orders are as follows:

"Order No. 11—To Engine 12, Engine 7 and Operator at A. To Operator at B: Engine 12 will work extra between A and B until 6 o'clock p. m., regardless of all trains. Engine 7 will run extra from A to C and return to B. Engine 7 and Engine 15 will run ahead of extra work Engine 12 from A to B. Operator at A will hold all regular south-bound trains for orders. Operator at B will hold all north-bound trains for orders. (Made complete at 12:02 p. m.)

"Order No. 16—To Engine 7 at B: Engine 7 will run extra B to A before 4 o'clock p. m. (Made complete at 2:30 p. m.)

"You will note Order No. 11 was addressed and completed at 12:02 p. m. However, at 2:22 Order No. 11 was annulled to Engine 12 but not to Engine 7 and the order for Engine 7 to run extra from B to A was given at 2:30 p. m. The question is, did Engine 7 have a right to proceed on the running order (No. 16) without Order No. 11 having been annulled to him? A is north and C is south."—*A. S.*

Answer.—We assume that Order No. 11 is intended to be delivered to all south-bound trains at A and to all north-bound trains at B, although it does not say so. Presumably extra 7 has run from A to C and returned to B, as directed by Order No. 11. It is also presumed that in the meantime Order No. 11 has been annulled to work extra 12 and the operators at A and B. Engine 7 receives Order No. 16 at B directing it to run extra to A, but it says nothing about Order No. 11, and the operator does not offer to deliver Order No. 11, for it has been annulled to him. Whether extra 7 can proceed regardless of work extra 12 involves the question of whether an extra, after it has fulfilled its old running order and gets a new one, must consider that all its former orders have expired or whether it can continue or *must* continue to use some which it formerly held.

Our opinion is that after extra 7 north arrived at B it had fulfilled its running order and was off the road, so far as any right to use the main track was concerned. When the same engine and crew started out again they were, in a train-rule sense, beginning another trip and should be given full instructions with regard to other trains the same as though they were leaving the district terminal, and they were not supposed to know anything about any other trains in the territory over which they were to run.

That is what we believe to be the reasonable and rulable answer to the question, but in actual practice, a careful conductor and engineer would find out whether the work train was on the road. Rule 106 is always in effect, and if there is any doubt as to its being safe to proceed the rule should always be kept in mind.

We think it is the duty of the proper officers to make a ruling with regard to such cases and, personally, if there were no ruling and no instructions, we should want satisfactory information that the work extra was out of the way.

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Railway Club Proceedings

Signaling on Lines of the Southern Pacific Co.[*]

The Overland Limited, west-bound, arrived in Truckee shortly after nine, one bright spring morning, and coming to a stop, waited the usual five minutes for the car repairers to make their inspection.

Everything in good order, we were ready to start, but the conductor waited at the office window, and, walking towards him I heard some one say: "Haven't cleared the block yet." No. 5 was ahead of us and had not passed the next station, which accounted for our delay.

All trains between Truckee and Sacramento (a distance of 120 miles) are, in addition to the watchfulness of the train dispatchers, doubly protected by the Telephone Block System, the entire line being divided into blocks in which only one train is allowed at a time. In each block office a telephone is located, connecting with a similar office east and west, and as the operator hears an approaching train he "clears" his signal for the train to proceed, or keeps it at "danger" if he has failed to receive word from the next office that the preceding train has safely passed, which arrangement is of greatest assistance in preventing collisions.

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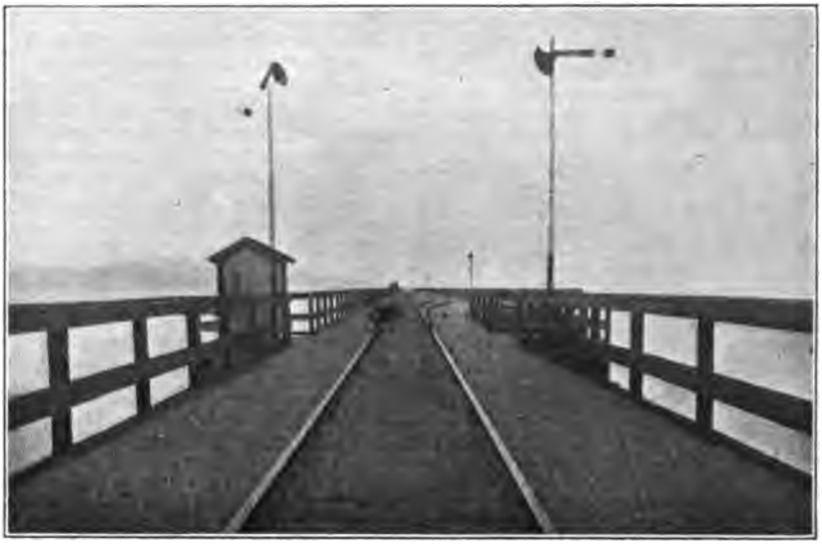
[*] By E. M. Cutting, Div. Foreman of Signals, Southern Pacific Co., West Oakland, Cal.

The block was clear now, and we pulled out of Truckee twenty minutes late, with orders to pass No. 5 at Summit. I rode in the baggage car, with both side doors thrown wide open, so as not to miss any of the beautiful, and, hearing four short whistles, I looked ahead just in time to see the semaphore signal at the next block drop to "safety" position, which gave our engineer assurance that the road was clear to the station beyond. We were going up-hill, and, looking across, I could see where the road doubled back along the mountainside, the smoke pouring in volumes from the cracks in the snow-sheds, as the engines on No. 5 slowly dragged their load up the heavy grade.

The snow-sheds are built to protect the tracks from snow, which falls to a great depth in the Sierras, and they extend almost continuously over 40 miles of road. Soon our train entered the sheds, which shut off much of the picturesque view, but enough could be seen to give a fair idea of the ruggedness and grandeur of the mountains, erected when the world was building, as it were, like a mighty barrier, to set apart California for a chosen people who would some day dwell within its borders.

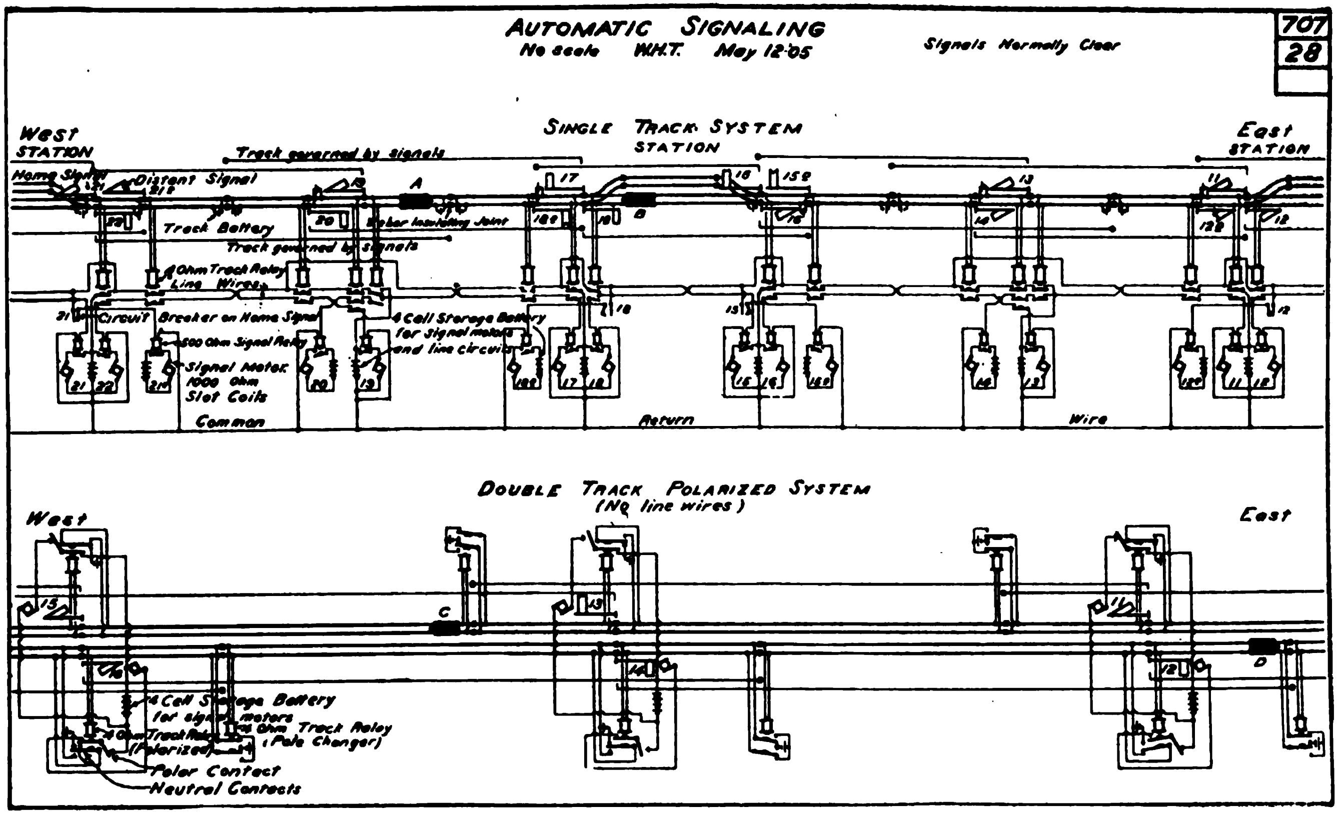


AUTOMATIC SIGNALS ON THE 13-MILE TRESTLE OVER SALT LAKE OGDEN-LUCIN CUT-OFF

"Train Ahead" in the Block

At Summit our engines seemed to breathe a sigh of relief as we stopped at the station, for the climb was over and it was all down-hill now for 80 miles. A moment's stop to test the air brakes and try the signal whistle in the engineer's cab, and then a rapid drift down grade, winding along through the mountains, sometimes bursting from the semi-darkness of the sheds into the blinding glare of the sun, glistening on the snow, as we crossed a trestle, our engineer constantly on the watch, for signals are hard to see in the sheds and it is so easy to run by.

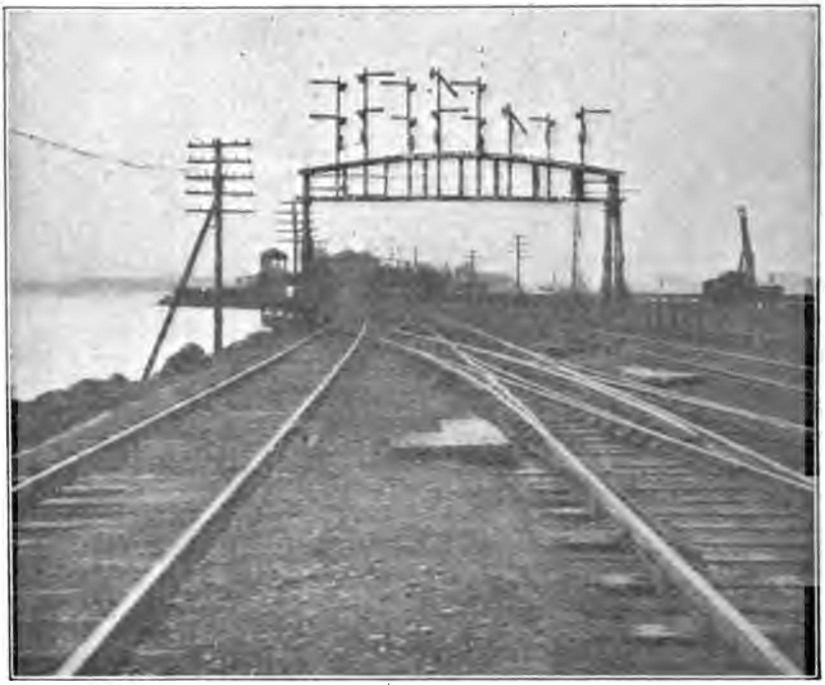
Every few miles, four sharp blasts of the whistle would notify the block opera-



Blue prints of this drawing (5½ x 9 inches) issued to signal repair men for handy pocket reference tor that we were coming, and he in turn would set his signal to pass us on to the next station, every link in the 120-mile chain doing its part towards our safe passage.

The seasons were constantly changing, and we lived a month of springtime in an hour, for, leaving the Summit with seven feet of snow on the ground, we shortly reached the swelling buds; on to the shrubs just bursting into leaf, then to the blossoming fruit trees, the orange orchards, and at last down into the Sacramento Valley, with its waving fields of grain and beautiful wild flowers, across the American River, and we rolled into Sacramento, the capital city of California. A stop and a change of engines, and then across the Sacramento River, with a 57-mile run to Benicia, this part of the road the latest to be equipped with the telephone block system.

At Benicia our train was cut into sections and run onto the "Solano" (the largest ferryboat in the world) and carried across the Straits of Carquinez to Port Costa. Between Port Costa and Oakland the road is double-tracked and is equipped with automatic signals of the Union Switch and Signal Company electric semaphore type, using that company's polarized track circuit system, which avoids the necessity of overhead line construction.

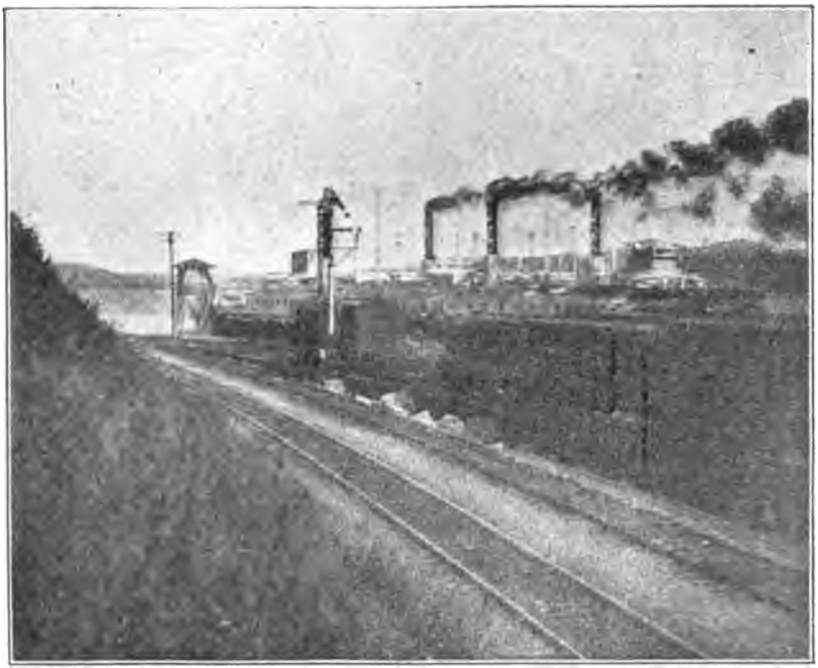


SWITCHES AND SIGNALS—TOWER No. 1, OAKLAND PIER, LOOKING TOWARD SAN FRANCISCO

At Oakland, counting both the large and small, there are seven interlocking switch and signal towers, the largest, Tower No. 1, located at Oakland Pier, an arm of made land projecting about a mile out from Oakland into San Francisco Bay, this fill being wide enough for four tracks and a wagon road, spreading out at its western end to accommodate twenty tracks and a large depot building. Tower No. 1 is equipped with a seventy-lever electro-pneumatic machine operating forty-seven switches and sixty-nine signals, which control the movements of all trains in and out of the Terminal Depot.

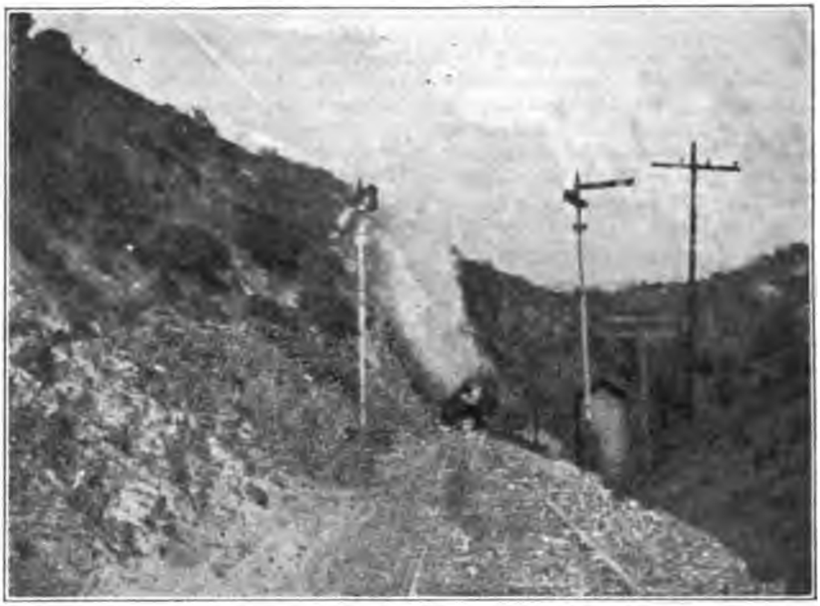
At the shore end of the mole is located Tower No. 2, with a twenty-seven-lever machine of the same general pattern as Tower No. 1, and between the two towers the movement of trains is governed on the four tracks by automatic semaphore signals of the electro-pneumatic type. This automatic system extends on out to Tower 4, near Sixteenth-street Depot, and another branch of the automatic system controls train movements along First street, on the extreme southern side of Oakland, to Tower No. 3 and beyond, over the First street trestle to Fruitvale.

Near Tower No. 3 is a drawbridge across the estuary between Oakland and Alameda, and on this bridge, which is turned by electric motors, is a tower with a mechanical signal plant which operates signals and switches for trains approaching the bridge from either direction.

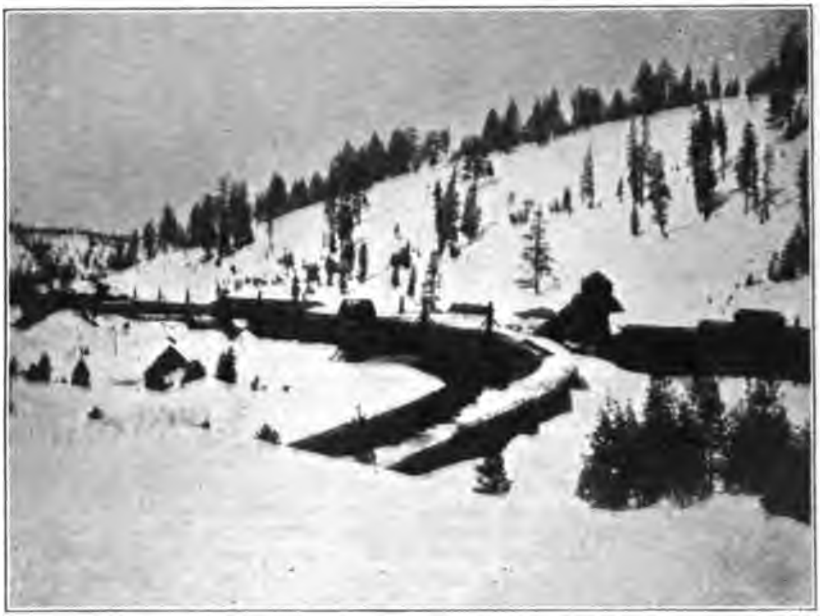


SIGNAL TOWER No. 8 (TAYLOR ALL-ELECTRIC SYSTEM) AND FERRY-BOAT "SOLANO" APPROACHING SLIP AT PORT COSTA, CALIFORNIA

The towermen in the interlocking towers are mostly men who have been injured in the train service, some having an empty sleeve and others wearing an artificial leg, and there is no little rivalry among the leg wearers as to who possesses the best make of limb and who walks with the least sign of a limp. Except in a few cases their work is not particularly trying, although they must all be watchful, with minds fully on the business at hand. They seldom act the role of hero, as the newspapers put it, "narrowly averting a frightful accident by their wonderful presence of mind in throwing open the derailing switch," for the said switch is a part of the interlocking, and from necessity must be open before a signal can be cleared over a conflicting route. In other words, the hero business plays no part in the towerman's life, and he is a good operator who handles the trains with the least confusion, and in all, displaying good judgment regarding their rights,



AUTOMATIC SIGNALS—TEHACHAPI MOUNTAINS, SOUTHERN CALIFORNIA



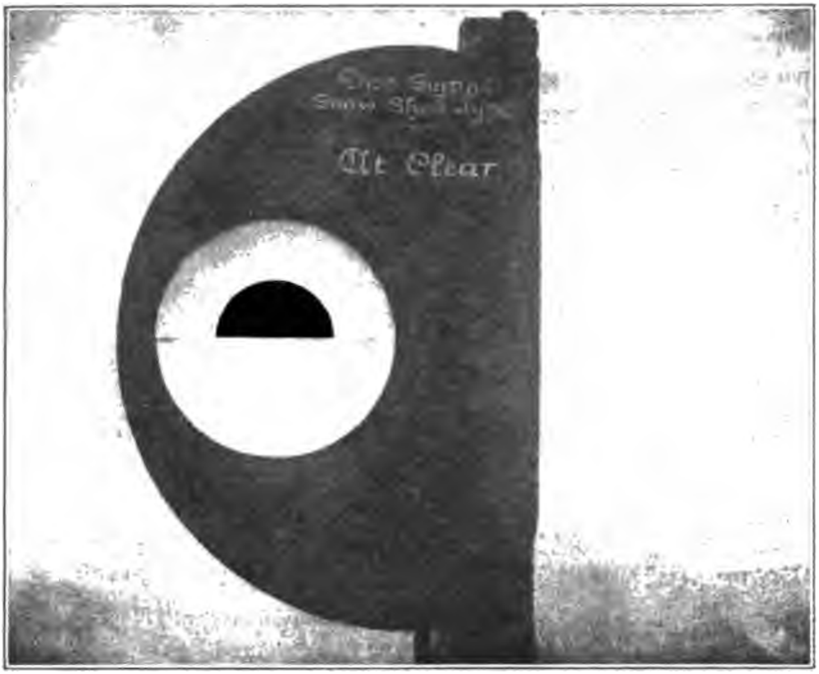
SNOW-SHEDS AT SUMMIT STATION, SIERRA NEVADA MOUNTAINS, CALIFORNIA
Through which it is proposed to install an Electric Train Staff System, with Snow-shed Disc Signals. (Picture taken about the middle of April)

holding those which can best stand delay, and setting a clear signal for those of greater importance.

The first signal plant which the Southern Pacific Company installed was erected at Oakland Pier in 1885, and with this small beginning it has since grown to be quite an important branch of the railroad business; the company, on its Pacific System alone, now operating separately, or jointly with other roads, forty-five interlocking signal towers of various kinds, and having 182 miles of track protected by automatic signals on the Pacific System, and sixty-seven miles on the Salt Lake Division, or a total of a little over 500 automatic electric semaphore signals, operating on the "normally clear" plan, using portable storage batteries for supplying current to the signal motors and line circuits.

It is proposed to signal about 340 more miles of the road this year, using about 690 electric semaphores for the purpose, and in addition to this it has been decided to equip the road between Truckee and Rocklin (a distance of 97 miles) with the electric train staff system, in combination with 200 snow-shed disc signals, designed and manufactured by the Southern Pacific Company, for their snow-sheds, it being impracticable to use semaphore signals in the sheds, on account of insufficient room between the tracks and sides of the sheds.

The principles of the staff system are briefly as follows: Each station is equipped with two staff instruments, one for the east and one for the west block, each instrument being interlocked with the corresponding instrument at the other end of its respective block. Each staff instrument is provided with several "staffs," and when a train passes a station a staff is delivered to the engineer, who must carry the staff and deliver it to the operator at the next station before it is possible to issue a staff to either an



SNOW-SHED DISC SIGNAL

Designed and manufactured by the Southern Pacific Company for use in snow-sheds and tunnels

approaching or following train in the same block, it being strictly understood that an engineer must not pass a station without having received a staff, which staff is his only authority for proceeding into the block.

The organization to carry on all this signal work consists of a signal engineer in the general office of the company in San Francisco, with division foremen of signals, with their forces, at the various division headquarters, where there is sufficient signaling to warrant having a force of men for this purpose, and with the large amount of new signal work under way on the various divisions, signaling is rapidly coming to the front as an important feature in railroad operation.

The installation of new signals is done under the immediate supervision of a construction foreman, who is usually selected (on account of special fitness) from among the men in the regular signal repair force, and with two or three experienced signalmen as a nucleus, a gang of from sixteen to twenty men is organized, which builds a pole line, strings line wires, erects battery houses and signals, and as five or ten miles of work is completed, the signals are put into service, and a man, usually from the construction force, is left in charge as "signal maintainer," and he, on his velocipede car, rides up and down over his district every day, sunshine or storm, making a careful inspection of everything and applying the proverbial "stitch in time," which after all is the secret of reliable and satisfactory operation of most branches of the business, whether it be signals, locomotives, or all the rest which goes to make up a railroad.—Pacific Coast Railway Club.

WORKING MODEL OF SINGLE TRACK AUTOMATIC BLOCK SYSTEM AS INSTALLED BY SOUTHERN PACIFIC COMPANY

This model is built for the instruction of train and enginemen, on the operation of single track signaling, the model being six feet long, showing actual arrangement and working of eleven signals on six miles of track

*Motive Power Terminals.**

MR. GAINES: This is a pretty broad and important topic. It is broad in that it consists of a great many component parts, and it is important in that the efficiency of terminals for any given movement of freight, the number of engines that are required, and the greater the efficiency the less the number, and it further enters into the cost question, due to the cost of handling engines at terminals. Since I have been requested to discuss this question I have made some notes from day to day, and I hope you will pardon me if I read from them.

A. What can and should be done to reduce locomotive terminals to the basis of machine for treating and handling engines apart from question of housing, the object being the prompt handling of power, greater efficiency in service and less detention at terminals, while affording more time and better facilities for care and repair of engines.

This question resolves itself into what facilities and arrangements of same are required for the most expeditious handling of engines at terminals. This will vary greatly with the locality and available room, the amount of power turned, the class of power, whether road, passenger or shifting, combinations of same, and whether engines are regularly crewed or pooled. If the arrangement is such as to satisfactorily handle pool engines with least delay, there should be no trouble with the handling of regularly crewed engines. It is also probable that where there are two classes of power nearly equal, such as freight and passenger, that it is probably advantageous to have separate ash tracks for each, to insure giving each the proper movement. An outline of a desirable arrangement would be as follows:

Engines when delivered by the crews not to be brought to the house, but rather to a relay track, which in turn for many reasons should be situated as near to the house as possible without interfering with the return movement into the house and again with the outgoing movement, and it should be located near the house for the convenience of engine crews who have more or less equipment to remove from engines, together with their clothes, which must go into their lockers in the house. Water crane to be located at this point. At the entrance of relay track, a joint inspector should be stationed to make a joint inspection of the condition of firebox with the train crew before they are relieved. It is also suggested that at this point a small office be provided for the hostler foreman, and where the engineman can make out his work report. This is to be made out in duplicate, one copy to be forwarded to roundhouse and one copy to be retained by hostler foreman for his information in disposing of the power. This arrangement will then permit him to separate engines requiring little or no work from those requiring fires drawn or heavy repairs, and give them a prompt movement, while engines which can not be at once available may be stood aside to wait until such time as they can be handled without interfering with the live power.

Communication, preferably by telephone, should exist between the hostler foreman and the roundhouse foreman, so that he may keep the roundhouse foreman posted as to the number of engines and the probable time they will be in the house, and the probable amount of work on them when they arrive. This places the roundhouse foreman in a position to talk intelligently in the shortest possible time with the transportation department as to what he can furnish them in the way of power.

On account of the work performed by the hostler foreman, he should be a responsible man, and one capable of handling to best advantage the varying situations which arise.

After passing the inspection point, the relay or standing tracks, two or more as circumstances may require, should be of sufficient length to accommodate a large congestion of power, which occasionally happens when trains are held out. One track should be for engines which are to be given immediate attention, and a second track for engines which are to wait for an available opportunity, and in some cases, additional tracks may be found advisable under certain conditions, including a track from inspection point to the ash track, independent of all others, for the handling of engines like double-crewed shift engines, which are to a certain extent given right of way over all other classes of power. All of these relay or standing tracks leading to one or more ash tracks. The ash tracks should be of sufficient length to accommodate several engines at a time, and the roundhouse force so organized that in case of a large number of engines requiring handling at same time, men can be temporarily drawn from other work to assist until the rush is over.

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*Subject opened by Mr. F. F. Gaines, Mechanical Engineer, Philadelphia and Reading Railroad.

The method of handling of ashes is foreign to the question in hand, but the pits should be so constructed that the removal of ashes can be accomplished without interfering in any way with the clearing of fires at any time. It may become advisable, especially in latitudes where the winters are severe, to provide a live steam line at the ash track with several connections at intervals for the thawing of ashpans when frozen. From the ash tracks, there should be an independent return route to the house, passing on the way the coal dock. There should also be a track for movement to the coal dock before going on ash pit, for engines where fires are drawn and requiring as short movement as possible, account of action of cold air on the flues with fires drawn. It may be suggested here that engines should be coaled before going on the ash track. While in some cases this may be advisable and work out all right, yet on the other hand, with the large tenders and the large engines used today, it certainly gives a hostler much more of an opportunity to work at his fire if the tender is empty than if loaded full with coal. The coal docks should be such as to load the coal in the shortest possible time by some gravity method, and also have in many cases two or more tracks for loading. It should be provided with live steam line which by means of hose can be attached to perforated pipes to be driven into the coal in winter when frozen to facilitate prompt unloading. A scarcity of coal on the dock, due to frozen coal, is not an infrequent occurrence and is as productive of delay as any other cause unless there is a large storage capacity to the docks.

At some point, preferably near the coal dock, a wood pile should be located, and if possible, so that it is also accessible to track which leads to the ash pits. Wood stored on elevated platforms about the height of tender can be handled in much less time than where it is piled on the ground.

From the coal dock, tracks should lead directly to the house, and where power handled is of any great quantity, the table should be power driven. Separate exits and entrances to the house should always be had where possible with water cranes at the outgoing and incoming tracks, near the table.

The roundhouse itself to quickly effect repairs and to do the necessary work should be thoroughly ventilated, well heated in winter, provided with the necessary tools and machinery and a hot water boiler washing system.

Given the necessary facilities and tracks, they should be so arranged that the movement is continuous from the time the engine is turned over by the crew until it reaches the crew again ready for going out, without doubling at any time over the same piece of track for different purposes, and in all cases secure from interference from yard or main line tracks in all movements.

B. The best method of heating and ventilating roundhouses.

There seems to exist on this topic a diversity of opinion in many different discussions of the question, it being maintained by some that the low house with proper ventilation works satisfactorily, while on the other hand, others will no doubt state that the higher roof is much more satisfactory and surer of giving a clear house.

In cold climates, whatever the system of heating, it should be such as to deliver the heat in the pits and on the floor level as much as possible with means for concentrating, if desired, a large amount of heat on any particular pit for thawing out the ice adhering to the machinery. No matter what the system, it can not be satisfactory, unless in connection with it, easily operated and tight doors exist, doors which can be readily opened and shut with minimum of exertion, and which when shut are tight and prevent a large amount of cold air entering. Roundhouses have been built with the turntable covered entirely with the roof so that in coming in and going out of house, there are only the entrance and exit at the time of coming in or going out opened. This may or may not have its advantages.

In other cases, it has been found advisable to put in double windows in the winter to prevent the loss of heat from this source. Stoves and direct steam have not been found generally acceptable forms of heating, and probably taking all in all, the hot air system properly installed, and with sufficient capacity, is the best all-round method of heating.

The amount of ventilation necessary and method of obtaining it depends so greatly on the form and height of roof and the method of heating as to prohibit any general treatment. Well-heated roundhouses, with heat delivered at or near the floor, requiring only a small amount in addition to that furnished by the opening and closing of the doors, and the smoke jacks.

Considering the enormous waste of heat from smoke-jacks, ventilators, etc., is it not probable that the cost of an exhaust system with properly located hoods might be offset by lessening the quantity of heat required and the cost of the coal used for obtaining it?—New York Railroad Club.

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*Proper Loading for Locomotives.**

Mr. Henderson: Mr. President and Gentlemen—I have just made a few notes here which probably will not take up a great deal of your time, and I will make my remarks as brief as possible.

When the Secretary sent me the request to open this discussion under the head of "Proper Loading for Locomotives" I found in it this clause: "What rules of practice underly the proper loading of locomotives on the basis of conducting transportation, considering all the factors." I think every division will have to constitute a special study. I do not think we can apply any rules which will apply to all cases. Thus under the head of general subjects we have to study the question of fuel, water, oil and miscellaneous supplies used on locomotives; and, secondly we have to study under the head of repairs, the question of general repairs and running repairs, as also the policy that should be adopted regarding renewals. Thirdly, in connection with the labor charges we would have to investigate the schedule of cost for the care of the engine itself, and find out what was paid for boiler washing, etc. Then again we would have to take into consideration the question whether interest charges should not be added.

Many of these items vary with the physical and traffic conditions; and it seems to me they will have to be worked out and summed up. We have different conditions and loads, and when we work up these different items and calculate what they will be under the varying conditions, and tabulate them, we are able to find out approximately what will be the most economical basis for operating on any given division; but we certainly must not conclude that the same case will hold true on some other division which has different physical characteristics or different rates of charge.

It seems to me the two most important questions to be considered in this connection are the cost per ton mile of movement and the number of ton miles made per engine, per month, or any other given time.

Assume a hypothetical example of a road 150 miles long with a one per cent. grade, the summit in the middle, one-half being 1 per cent. up-grade and the other half being 1 per cent. down grade. The speed up may be 5, 10, 15, 20 and 25 miles per hour. At 5 miles per hour uphill the cost for 1,000 ton miles is 66 cents; 10 miles, 66 cents; 15 miles per hour, 62 cents; at 20 miles it is 73 cents, and at 25 miles per hour it is 82 cents. There we see that at 15 miles per hour we have the lowest cost per ton mile. The number of ton miles the locomotive could make in the month, at 5 miles per hour, would be 5,880,000 ton miles. At 10 miles per hour it would be 8,700,000; at 15 miles 8,800,000; at 20 miles, 6,680,000; at 25 miles per hour, 5,300,000.

Thus we see that at fifteen miles per hour the cost was the lowest per ton mile, and the amount of ton miles hauled per month was the greatest. In other words, it was 50 per cent. greater at 15 miles per hour than at 5 miles per hour, and also 50 per cent. greater than at 25 miles per hour. So at 15 miles per hour we have the greatest locomotive efficiency and the greatest amount of work done in a month.

I think too much attention is paid to paper records. A great many imagine, possibly not without some reason, that if they can show a large tonnage per train mile they are going to receive very nice letters from the general manager and the vice-president. I think many general managers and vice-presidents who insist upon heavy train loads have been making that mistake. We often find an extra engine is sent through light, and five minutes later another engine comes along with all the train load it can stagger under. By putting the heavy load on one engine, they are able to show from one engine a larger amount hauled per engine mile than if they double-headed the train. It goes without saying that this is an expensive way to operate; the repairs and everything else run into fabulous figures. I think a great many managers who are stuck on the heavy train load really cause the superintendents to work up heavier train loads than is actually economical.

There is so much stress laid on fuel

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*Discussion opened by Mr. Geo. R. Henderson.

consumption nowadays that it is necessary to consider the results increased speed have upon the consumption of fuel. Of course, with the increase in speed the consumption of fuel goes up rapidly; also the increase in load affects it materially. I remember a case where there was a reduction in grade which increased the amount of coal burned per ton mile, and it could not be understood until it was figured out. The reduction in grade caused an increase in the amount of coal per ton mile. Of course, the total cost of moving a ton mile was less, but the amount of fuel was greater.

Now everyone knows that the reduction of load put into use with congested traffic, has a greater effect in cleaning up yards and getting traffic out of the way, than by increasing the train loads.

It seems as if 12 to 15 miles an hour might be the most economical speed in both ways, that is, the speed at which not only the ton mileage can be handled at the least cost, but also the greatest number of ton miles can be handled by any one engine in a month. In many cases that speed is the most desirable not only to get the greatest amount of material over the road in a month, but also at the lowest cost per ton mile, taking all the divisions together. However, no satisfactory results can be reached by considering all the divisions; but each division must be worked out separately and for its peculiar characteristics. (Applause.)—New York Railroad Club.

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CLIFF HOUSE, SAN FRANCISCO, CAL.

(Photo by Bro. B. Dee, Lodge 5)

Discussion of Current Topics

Employment on Japanese Railroads.

Letters of inquiry relative to the possibility of securing employment on Japanese railroads, and the rate of remuneration and other conditions governing same, are again being received at the Magazine office. With a view to securing information on this point from the most reliable and authentic source, the Editor directed a letter to Mr. Takahira, Ambassador from Japan, soliciting information on the subject, to which the following is a reply:

LEGATION OF JAPAN,
WASHINGTON, October 21, 1905.

Mr. John F. McNamee, Editor, Locomotive Firemen's Magazine, Indianapolis, Ind.:

Dear Sir—In reply to your letter of the 17th of October, which has been just received, I have to say that I have no information whatever as to whether there is now in Japan a demand for the services of American railroad men. The railroads required for the purpose of military transportation were extended during the war, and the men required for their extension must have been already engaged. I think it is rather too early to expect any additional engagement of such men on account of the peace just restored. Yours truly, (Signed) G. TAKAHIRA.

It is safe to say that there are not at this time, nor liable to be in the life of the present generation, any openings on the railways of Japan that would justify an American railroad man seeking employment at his chosen occupation in that country.

Civic Federation.

The Magazine is in receipt of Bulletin No. 3 of the Civic Federation of New England. The bulletin announces that the membership roll of that body now numbers almost 300, and that new members are being steadily added. The bulletin publishes the names of its entire membership as proof of their sincerity in the work and of its desire to conduct its business in the most open and above-board manner possible. Many letters from prominent representatives of both capital and labor, as well as from clerical, professional, literary and other public men, endorsing the aims of the federation, appear in the pages of the bulletin.

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Alliance of Freight Handlers and Teamsters.

Negotiations which have for some time been under way looking to the establishment of an alliance between the freight handlers and teamsters of Chicago have reached a point where success is assured. Heretofore these two unions have acted independently of each other, although the nature of their work brings them at all times in close contact. It is expected that the proposed alliance will prove mutually and substantially beneficial to the organizations interested.

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Labor Laws and Finances in New Zealand.

The Wellington, New Zealand, Evening Post recently published the following relative to conditions of labor and finances in that country:

A cordial tribute to the New Zealand workingman was paid by Mr. J. F. Kerwin (constructing engineer of our tramways) last evening, on the occasion of a farewell dinner tendered to him. Before he came to New Zealand, Mr. Kerwin was made somewhat nervous by talk about advanced labor laws and by warnings that he would find he was not driving niggers in the Southern States of U. S. A. He assured his audience last evening that, having constructed tramways in the Northern and in the Southern States, and in Glasgow and England, he was never better pleased with his men in his life. A great deal of this result had to do with the dignity and pride the workingman in New Zealand possessed. Coming two months late. he finished the work six months ahead of contract time, and he could not have done this without good men, and he gave credit for that to the New Zealand workers.

The Premier, commenting later on, stated Mr. Kerwin had said that in carrying out this big work in New Zealand, with its advanced labor laws, he had not the slightest difficulty, and all fears and misgivings on the point had vanished when he came face to face with the problem. The reason was that to a fair-minded man who gave a fair day's pay and treated his men well, the men gave a fair day's work. "Testimony on this point from Mr. Kerwin carried more weight than it would from me, or from anyone else who was instrumental in supporting and putting on the statute book the labor laws of New Zealand, and I do believe that other employers in the colony, if they spoke their inmost minds and experience—those that have treated their men like Mr. Kerwin—would corroborate what Mr. Kerwin has told us this evening." It meant a good deal, because it meant labor and capital working together, labor giving a fair return, and the employer being safe in that he knows where he is. In tendering for work, the employer in New Zealand thus had a big advantage over employers in the United States or the United Kingdom, in that he knew for a fixed period what he had to pay his men. Consequently, the investment of capital was much safer in New Zealand than in countries where labor was an unknown quantity. Much weight attached to Mr. Kerwin's statement, because of his vast and varied experience in other countries; and he (the Premier) knew that, if justice was done, there would be less criticism against the existing condition of things in New Zealand.

The Premier went on to defend the colony's finances as well as its labor laws. During the last few hours a statement had, he said, been published to the effect that the colony's credit at home was suffering, and that our stocks, as compared with the stocks of other colonies, were declining. "I say," asserted the Premier, "that that is a pure fabrication, and when it is circulated by one holding a very responsible position, why should he wish to injure the credit of the colony? Even if there was foundation for it, he ought to have some patriotism, and ought to be the last to decry our country and injure its people." But he (the Premier) was well posted in these matters, and his latest intimation from the center of the financial world and from the agent-general was that the financial state and credit of the colony were in a very satisfactory position. Some people took alarm if the quotation of one of our stocks was a little lower because interest had come due and been paid the week before. Shares of companies were often affected in the same way, after payment of dividend. If one colony's stock had nine or ten months' accruing interest, and ours was a few shillings under that, this country was told that our stock was declining. "Gentlemen," added the Premier, "ignorance has been the curse of the world, and in this case ignorance is the only excuse." The colony was in a most prosperous position, its finances were absolutely sound. In the course of a few days they would have the certificate of the auditor and controller-general, and "the surplus of our colony will positively be more than half a million sterling." With respect to the public works fund, out of which they found the railways, he would have more actual cash to his credit than he had had since he became Prime Minister.

In speaking on the subject of Mr. Kerwin's tribute to the New Zealand worker, the Mayor, the Hon. T. W. Hislop, expressed gratification that Mr. Kerwin had found that the ordinary laborer here was more intelligent and co-operated in a better manner with his employer than did the ordinary laborer in the Old Country. It was sometimes said that the effect of our socialistic and labor legislation was to make the worker careless of the interests of his employer, but Mr. Kerwin's deliverance proved what had been laid down by the great contractor, Mr. Brassey, father of Lord Brassey, that if the workman was treated as an intelligent being and well paid and fed, he would give a proper return in work. Mr. Kerwin's finding, added Mr. Hislop, gives us confidence in our social conditions.

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Attends to Business.

State Topics (Texas) has this to say about one of our State law-making members:

Representative J. T. Ward, of Gregg County, is a working member of the Legislature in more ways than one. He not only gave zealous attention to his duties at Austin, but when at home he makes a Texas and Pacific switch engine perform for ten or twelve hours a day. He is a younger statesman both in years and experience, but he is learning mighty fast, having made a fine record last year. He will be a candidate for re-election next year, if the Texas and Pacific can find another engineer to run the switch engine for a few months.

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Contributed

Railroading in Canada.

As I am in receipt of a number of letters from some of our members asking for information regarding railroading in Canada and the probability of employment in the Northwest, I will endeavor to briefly explain the situation as I understand it from traveling through that country, and from other information in my possession. While there are many railroads in Canada, I will only deal with the largest systems and the roads that are about to be constructed.

The Canadian Pacific was built some years ago by the Dominion Government for the purpose of opening up the Northwest Territory and establishing a Canadian line through to the Pacific Coast. Since its construction it has undergone several changes, and many valuable branches have been added, not only in the West, but in the East, so that with its large mileage it reaches from the Atlantic to the Pacific Coast. On account of competition and encroachments of other roads it is still extending its lines so as to reach all the important cities, not only in Canada, but also a portion of those in the Western States.

The Canadian Northern started operations by building lines out of Port Arthur and Winnipeg, and as the directors saw fit, and were financially able, they have been adding to their mileage so that within a reasonable period they will have a line of railway from Yarmouth, Nova Scotia, to Parry Sound; a line of steamers from Parry Sound to Port Arthur, and a railroad from Port Arthur to the Pacific Coast, the steel having already been laid to Edmonton in the west. Besides this they are building branches into all the principal towns and cities in the Dominion.

The Grand Trunk Pacific, which is an assured fact, as several hundred miles are now under construction, is to extend from Moncton in the East to the Pacific Coast in the West; that portion of the road from Moncton to Winnipeg being constructed by the Dominion Government, and afterwards leased to the Grand Trunk Pacific for a term of years, while the road from Winnipeg to the Pacific Coast will be built and owned by that road. There will be several branches in connection with this road. One in particular, which will run from the main line down to Ft. Williams, as this will, no doubt, be the principal lake port on Lake Superior, and from which point large shipments will be made during the season of navigation. It is also expected that large elevators and engine shops will be built at this place.

As this road is in its infancy and construction only commenced a few weeks ago, there has not yet been an official staff appointed besides the directors and general manager, and I doubt (outside of those working for the contractors having ballast trains) if many men will be employed until 1907. When once put into service there will be many splendid opportunities on this road for sober, industrious and reliable men who are willing to use their talents and grow up with the country—to the indifferent I would say there are plenty there now, and gold is not picked up in the streets nor given away for the asking.

While there are many good investments to be made in the Northwest, yet it is necessary for oneself or some trustworthy friend to be on the ground and pick up these opportunities as they are presented, for like all other places, land agents are not in business for their health. There is little chance for failure, provided common sense is used, as land, building lots, and enterprises of all kinds are constantly increasing in value.

The Northwest is devoted principally to either wheat growing or ranching. It is no uncommon sight to see miles of wheat fields in the summer, or thousands of head of cattle or horses pasturing on the hills or plains; but, no doubt, as the country becomes more thickly populated the large tracts of land will be cut up into smaller farms and conditions similar to those prevailing in other parts of the Dominion become established. The climate is beautiful during the spring, summer and fall, but during the winter months it ranges from 20 to 30 degrees below zero, except in exposed places or along the lake front, where it will get a few degrees colder. This intense cold is, however, not felt nearly so much as one would imagine, with continuously low temperature. In fact, it is not felt half so much as is the winter weather in other portions of the country where the thermometer ranges around the zero figure. From about one hundred miles west of Regina to the Rocky Mountains can be felt the effect of the warm chinook winds which protect that section of the country from any continued cold weather. Cattle can here pasture the year round. From the Rockies to the coast the weather is beautiful. While perhaps damp at certain seasons of the year, there is a good even climate in the valleys, where an abundance of fruit is grown. Of course, there are many advantages in this new country, yet like all other new places, there are some drawbacks, especially for railroad men. Western and Eastern life are far different. In the East you have all conveniences and social gatherings provided for you, but in the West you are thrown more on your own resources and your surroundings are just as you make them. The Western man may appear at times rough and independent, but when it comes down to true charity and brotherly love, you can reckon with him every time. If some of our engineers who know all about railroading in the East would go out on some of the Western roads, I believe that they would find there is something yet to learn, for there are districts which are inclined to be hilly and many curves covered with very deep snow, the weather being very cold in the winter time. There are places where one can look down for many hundred feet on one side of the train and up as many more on the other. Then again there is the alkali or bad water district, which requires some experience before you can render satisfactory service to the company or yourself. When you arrive at the mountains where you can see other tracks besides the one you are on, and a grade that takes three mountain engines all their united time and effort to get nine coaches to the summit, you will begin to realize that there are different kinds of railroading to be found here under varying conditions. From wheat harvest to the close of navigation on the lakes, and until the large elevators are filled (which is usually in January), there is a scarcity of enginemen, but from that time until the next harvest there is a surplus, unless they are willing to engage in other work.

With the advent of the new roads mentioned above and extension of the older ones this territory will without a doubt be during the year 1907 the best and largest field for railroad service to be found on the continent. The future of Canada for increased mileage of railroads and consequently increased number of Brotherhood men is very bright, especially within the next five years, and there are many other opportunities for sensible young men at all times.

While I would, of course, like to see articles appear from our members in different sections of the country, I considered it my duty as a Grand Officer to answer our brothers in a general way. There are many other points that can be touched upon if our members would only put their experiences and knowledge into writing, and by so doing they would not only help to educate each other as to conditions in their sections of the country, but assist the Editor in keeping our official organ where it now stands, viz., the peer of the best in the field of labor magazines.

E. A. Ball,
Fourth Vice Grand Master.

Accident Insurance in Germany.

The system of workmen's insurance which has been introduced in nearly all countries of continental Europe; its highest development is to be found in Germany. In that country a social experiment has been conducted on a vast scale, and I think the results achieved will be of interest to our American fellow-workmen, especially as far as accident insurance is concerned. Under the present law the obligation to insure is extended to all workmen employed in industry, transportation by land and water, fisheries and agriculture, a total number of about 17,582,000 persons. In general it does not include persons engaged in commerce as such, in the handicraft trades or in domestic service. All workingmen and technical experts earning less than $717 (3,000 marks) annually are required to be insured. Out of every 1,000 of the empire's population 305 are subject to accident insurance.

In the case of accident, benefits are paid for the first thirteen weeks by the sick insurance fund; beginning with the fourteenth week, the accident insurance institutions provide the following benefits: Free medical treatment; a pension during the continuation of disability, whether the disability is partial or total. In case of total disability the pension is equal to two-thirds of the earnings of the injured person; in case of partial disability the insured receives less than two-thirds of his former wage. In the case of fatal accidents a funeral benefit of not less than $11.90 and a pension to the dependents of the deceased are paid. The widow and each child receive 20 per cent. of the earnings of the deceased person, but not more than 60 per cent. together.

The income of the insurance institutions is secured by an annual assessment on each employer, determined from the amount of his pay roll and the danger rate of the occupation or industry.

The table below shows the total income in 1902 and for the whole period since the inception of accident insurance until 1902; later figures are not available:

Period.	Dues of Employers.	Interest and Other Income.
1902	$29,907,868	$3,743,936
1885–1902	258,646,000	34,015,000

The amounts which the employers are paying, compared with the total wages paid, show increases as the operations in the field of insurance are extended.

The expenditures in the year 1902 and in the period 1885-1902 were as follows:

Benefits.	1902.	1885-1902.
Medical treatment and sanitorium relief	$1,568,917	$13,488,495
Pensions to injured	18,653,490	136,613,254
Funeral benefits	128,876	1,364,167
Pensions to widows, orphans, etc.	4,422,084	35,641,701
Other relief granted	962,312	6,275,127
Total	$25,735,679	$193,383,744
Cost of administration.	3,965,983	37,822,352

The accident insurance is administered by so-called "mutual trade associations" of employes (Bernfs-Genoneuschaften), which represent the various trades and industries, and by managing boards of the state and municipal communities. The number of mutual trade associations is distributed as follows:

Industry, transportation, etc..	66
Agriculture	48

The system of government insurance is founded on the general belief that since the transformation of the agricultural to an industrial state, the liability to accident is greatly increased and that new means for meeting the conditions which that fact has brought about are demanded. The workmen, as a rule, are not content with the insurance laws as they at present stand; the cost of administration is relatively high, and the invalids or the dependents of killed workmen do not get enough for a living. The average daily pension of totally disabled persons was, in 1902, only about 40 cents (1.60 marks).

H. FEHLINGER,
Munich, Germany.

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Arbitration.

The Russo-Japanese war has ended and peace, white winged peace, now hovers over these two great empires, which only a short time ago were the scenes of bloodshed, devastation and ruin. President Roosevelt can not be lauded too highly for his timely intervention. His request for the peace conference at Portsmouth and the subsequent settlement of all differences upon terms agreeable to both governments has won for him the respect and admiration of the people of every nation and clime; a monument that will be to his memory more lasting than columns of brass and more to be appreciated than all the gold of Ophir and Ind. From the press, pulpit and platform we hear the pleading for universal peace. Popular sentiment is calling for another conference at The Hague, that the nations of the earth may be drawn more closely together and that war, cruel war, may be averted by means of arbitration.

The conditions and circumstances that have brought about the settlement of the issues pending between Russia and Japan suggest to the mind of the writer the consideration of arbitration as a means of settlement of differences existing between labor and capital. Certainly no evil can come of such a course if pursued in the proper manner. Past history teaches us that strikes are by no means preferable, and while they have been a court of last resort in many cases, have only tended to widen the gulf between the two great forces, and have worked a hardship upon the labor organizations involved. The victories of peace are greater than the victories of war, because no scars are left, no wounds to be healed, no homes wrecked, nor communities demoralized.

The teamsters' strike in Chicago is a striking illustration of this fact. Could the question of hours and wages have been referred to a board representing equally the capitalists and teamsters' organization, no doubt it would have been the means of reserving thousands of dollars to both labor and capital, and a stronger tie of friendship would have existed between the two contending forces. It is true that such methods have not met with the approval of many who have hoarded up millions of dollars produced by the hands of honest toil.

Now and then we hear the voices of such men as Parry and Post arising above their associates proclaiming to the world the unrighteousness of the cause of union labor and demonstrating their unwillingness to meet their fellowmen upon a common plane. Some have even gone so far as to liken the labor organization of the present day to that dangerous and turbulent element of anarchy that has become a loathesome vulture whose wings of midnight darkness overshadow the broad expanse of the universe, and with its iron beak is sapping the life blood of organized government.

These assaults upon unionism by vicious and unscrupulous persons only tend to weaken the cause of the aggressors and stimulate intelligent, sober-minded people to study the causes that lead to such attacks and to give more serious thought as to how these obstacles may be overcome. The ballot box, that safeguard of American liberty, is the place where labor may find redress for any wrong visited upon it unjustly. In our beloved country of which we delight to boast as "the land of the free and the home of the brave," the land above all other lands in pride, the laboring classes are by far in the ascendency and should not forget that it is their imperative duty to elect men to represent them in the different legislative branches of the government who will pledge themselves to support measures that are beneficial to the greatest number of American citizens, and especially should they be pledged to support an eight-hour law, and arbitration as a means of settling labor troubles. The right for one to think and act for himself is as inalienable as the right of existence, and when the laboring classes can arise to that plane that they can unite their forces in bringing about legislation such as I have outlined, then we will flourish as the green bay tree. Then the day of which poets and philosophers have dreamed will burst forth upon the world in all its golden splendor, and the hopes of the good of earth will ripen into rich fruition of a true recognition of the "fatherhood of God and the universal brotherhood of man."

R. C. FARROW.

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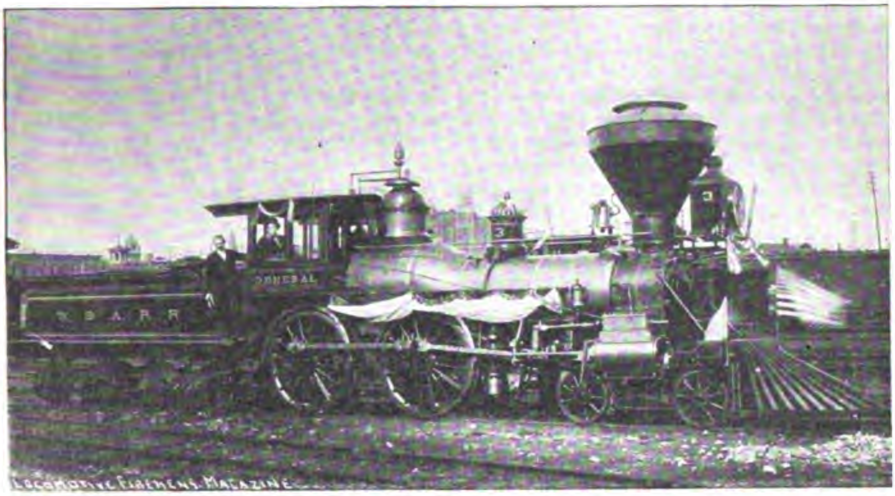
Miscellany

A Famous War Locomotive.

The Magazine is in receipt of a copy of a beautiful colored lithograph of the locomotive "General," which is being distributed by the Nashville, Chattanooga and St. Louis Railway. While this famous old engine is an object of great historic interest to all Americans on account of the prominent part it played in the thrilling experience of the Andrews Raiders, it will be particularly remembered by delegates and visitors to the Chattanooga Convention, to whom it constituted such a special attraction.



THE "GENERAL"

The "General" is still, as it was then, on exhibition in the Chattanooga Union Depot. A booklet entitled "The Story of the General," is also being issued by the N., C. & St. L. Ry. It contains a deeply interesting account of the exploits of the Andrews Raiders in their attempt to destroy the Confederate line of communications between Chattanooga, Tenn., and Marietta, Ga., giving accurately every detail of this daring adventure from the hour on the morning of April 12, 1862, when the twenty-two Federals under the leadership of James J. Andrews took possession of the "General" and three freight cars at Big Shanty while the train crew and passengers were at breakfast, and started off on their mission of destruction within sight of a camp of three thousand Confederate soldiers, until when eventually overtaken they abandoned the engine and endeavored to escape as best they could. It includes also a letter from the War Department giving authentic information as shown by its records at Washington relative to the identity of the twenty-two raiders and particulars as to those who escaped and those who were executed. Every detail of the exciting chase is given in a manner that holds the reader intensely interest bound to its conclusion.

The booklet discloses the fact not generally known that the "General's" war record is not confined to participation in the Andrews raid, and relates an interesting account of her presence at the battle of Kennesaw Mountain and her connection with the evacuation of Atlanta by Hood's army. The booklet is appropriately illustrated, and contains an excellent map of the Atlanta campaign, showing the course of the "General's" flight in Georgia. Copies of the beautiful lithograph of the "General" referred to above can be secured at the trifling cost of 25 cents each by writing Mr. W. L. Danley, general passenger agent, Nashville, Chattanooga and St. Louis Railway, Nashville, Tenn., and copies of the booklet can also be had from the same gentleman free of charge with or without the lithograph.

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World's Events.

The Thanksgiving number of "World's Events," an Eastern publication, maintained for the advancement of certain social and domestic interests, has lately reached the Editor's desk. In addition to appropriate reading matter it is profusely illustrated with pictorial suggestions of the good things generally available to the humble and exalted alike on that great American national festival. In fact, so suggestive are these illustrations that they constitute veritable instruments of torture to one forced to resort to dieting as a cure for obesity. Judging from its substantially increased advertising patronage and the air of general prosperity surrounding the Thanksgiving number, the hope is justified that "World's Events" will not be compelled to suspend publication with the Christmas number, as was anticipated by its editor and publisher, who, it is persistently rumored, can not under our present political institutional arrangements cast his first vote for some few years yet.

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A Hunting and Fishing Expedition.

Mr. T. J. Anderson, general passenger agent of the Southern Pacific System, announces that a one-thousand-mile hunting and fishing expedition to last for a period of fifty days will start from Houston, Tex., on the 15th of the current month, under the auspices of his department. This trip will be conducted on the same plan as one of a similar nature which was made last winter through southwest Texas and Old Mexico, and which proved a pronounced success.

The trip this fall will be made along the gulf coast between Houston and Aransas Pass, so as to give the disciples of Izaak Walton every chance to indulge in their favorite sport. The announcement states that camps will be pitched alternately near the seashore or inland in the dense thickets, so that those accompanying the party can enjoy both fishing and hunting at their pleasure. The party will be in charge of a well-known Southern Pacific Railroad official, and Judge J. D. Barbee, a renowned hunter and ranch owner, will act as guide-in-chief. The latter owns one of the best trained packs of deer and bear dogs in the Southwest, and as game of this kind is very plentiful in the country to be traversed by the party, some royal good sport is guaranteed.

Saddle horses and hunting wagons will be the means of transportation while en route, while experienced cooks, waiters and camp servants will be provided by the management. Those going with the party may remain only one or two weeks, or any part of the fifty days, to suit their convenience, joining or leaving the expedition at their pleasure. Further particulars will be furnished by Mr. T. J. Anderson, general passenger agent Southern Pacific System, Houston, Tex.

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Retirement of a Veteran Official.

Announcement comes from the Southern Pacific Railway Company, San Francisco, Cal., that General T. H. Goodman, who for thirty-seven years filled the responsible position of general passenger agent of the said road, has been retired on a pension on his own request on September 30, 1905. Mr. Goodman lays down the burden of his official duties amidst the sincere wishes of a host of friends that the evening of his life may be spent in peace, happiness and contentment. Hereafter all communications relative to the passenger traffic of the Southern Pacific Railroad should be addressed to Mr. Chas. S. Fee, passenger traffic manager.

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The Beautiful Sacramento Valley.

"Sacramento Valley, California," is the title of a handsome booklet of 112 pages, 5x7, recently issued by the Southern Pacific, and teeming with the most interesting matter, vividly descriptive of the beautiful valley from which it derives its name. The booklet is profusely illustrated with elegant half-tone engravings showing the development of that fertile region, orchards, hay, pasture and corn fields in sowing and harvest time, towns and railroads, expansive rivers, canyons, mountains and hills, farm cultivation by traction engines, and many other scenes showing the up-to-date development of the land of which it treats.

The description is detailed, and care has been taken to make it thoroughly reliable and authoritative, avoiding all exaggeration and anything that may be misleading in character. In addition to the descriptive portion, the writer, Mr. A. J. Wells, has given some forcible and valuable chapters on the subjects of "A Great Empire and a Great Opportunity," "Why Is the Valley Not Densely Settled?" "Cash Value of Climate," and "Social Life." A chapter of especial interest at this time, in view of the reclamation work of the State and general government, is that on "The Delta Lands of the Sacramento," with a fine map of the region. Tourists will be specially interested in the picturesque scenery of Lake Tahoe, the Sacramento River, and the region of Mount Shasta, the Fujiyama of America. The illustrations are excellent, made from the latest photographs, which have been specially taken for the book and are unusually well printed. The book will be sent to any address by any representative of the Southern Pacific or its advertising bureau, 431 California street, San Francisco, on payment of ten cents.

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Why Is It? How Long Will It Be Tolerated?

Under the caption "Justice or the Commune," the Alexandria County Monitor (Virginia) gives the following as a practical example of how the possession of wealth on the part of law breakers influences the administration of justice and a clear demonstration of how the criminal millionaire fares in comparison with the criminal mountaineer, even though the offense of the latter fades into dim insignificance when compared with that of the former:

Last week two Federal courts were in session—one in the great city of Chicago; the other in a little town in western Kentucky.

Two cases were called—one in each court.

In the Chicago court, the vice-president of the Schwartzchild-Sulzberger Company was on trial for conspiring to violate the interstate commerce law forbidding the granting or accepting of rebates over railroads. The Government had expended untold thousands to bring him to trial for having committed a crime. His crime was:

1st. Violating a criminal statute;

2d. Debauching a railroad official;

3d. Taking a criminal advantage of his competitors, by means of which the competitors had to forego the business of slaughtering cattle or handling dressed beef, as it was impossible to do so with the rebate granted to the favored firm.

In the Kentucky court there was on trial a tall, lithe, bronzed mountaineer, standing stolid and sullen, awaiting the heavy hand of the law. On a seat at the back of the room was a pale woman, with drawn features, surrounded by four or five thinly-clad children, awaiting the inevitable.

What was this man's crime? In some little green valley back in the hard mountains the year before he and his wife and children had delved in the ground, planted a few kernels and gathered a small crop of corn from the unwilling soil. Finding the expense of transportation to the nearest market greater than the corn would justify, he had turned it into whisky in a still hidden in a recess of the mountains.

He had not executed a bond to the United States for the conducting of this business; he had not paid the Government tax. An acknowledged violator of the law, yet he had not debauched his fellowman. The Government alone had been deprived of a few dollars revenue.

Compare for a moment the Chicago criminal and the Kentucky criminal. The one had left his comfortable home in New York in a Pullman car the day before; had stopped at the Auditorium Hotel in Chicago; on the morning of the trial he appeared in court with the ablest of the Chicago bar to plead for him. The attorney-general of the United States having "conferred" with the prisoner's counsel, the wife and children saw no necessity for leaving their luxurious home in the East to accompany him to Chicago. They awaited without anxiety his return to New York. His counsel answers for him at the bar of the court. He admits his guilt. The statute places the penalty at "fine" or "imprisonment" or "both." The sentence: "Ten thousand dollars fine; no imprisonment; confine the prisoner until the money is paid."

The prisoner steps to the bar of "justice," draws his check for ten thousand dollars payable from the proceeds of his crime, and returns that afternoon on the Chicago Limited for New York to be welcomed by his wife and little children, who have regretted his enforced absence for a day.

The Kentucky court room. The prisoner has never had a hundred dollars of his own. If represented, it is probably by counsel assigned by the court, who has no heart in the matter, as experience has taught him what law means to such a prisoner. In this court there has been no previous conference between counsel for the prisoner and the attorney-general of the United States. The sentence: "Ten years' imprisonment at hard labor in the West Virginia penitentiary." The prisoner looks up to see if he has heard aright. As he is led away he glances back at his wife and little children. He wonders if God Almighty will look after them during his ten years' absence. That night he sleeps in a cell. The wife and children loiter around the edge of the town for a month awaiting the going of the convict train. They have a glimpse of him as he departs for Moundsville, manacled to his fellow prisoners. The wife and children return to their bleak mountain home.

One of the children with the rudiments of education reads of the two trials. One self-confessed criminal returning in the Pulman car to his wife and children; the other, his father, chained to the seat, to be welcomed by the guard at the penitentiary.

Both in the same country under the same law. It is strange. The children grow to manhood not understanding it. A stone is loosened in the foundations of government.

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A New Magazine in the Railway Literary Field.

The first copy of "The Iron Trail," a new monthly magazine, edited by Bro. Ed. E. Sheasgreen and published at Minneapolis, Minn., has just reached the Editor's desk. It is a work of typographical excellence, and it is beautifully illustrated with elegant half-tones. As the choice of its name would indicate, "The Iron Trail" is devoted principally to the domain of railroad life and activities. It does not, however, confine its operations to that field, but reaches out to interest people in general and to bring them to a better understanding of and create amongst them a closer sympathy with the men and women of the railroad world.

The editor of the new magazine is a well-known writer, and has had nearly fifteen years of experience in engine service, a year of which was spent in mountain work. Amongst the leading special articles in the November issue are J. E. Mulkey's appeal for "The Man on the Track"; B. C. Rowell's description of the Rowell-Potter safety stop in a "Remedy for Railroad Accidents"; "The Laboring Masses and the Church," by C. D. Kellogg. "The Age Limit" and "The Question of Responsibility for Railroad Accidents" are two subjects that are well handled in the editorial department. "The Little Oak Tie," by the editor, is the title of a very pretty story opening the juvenile department, which constitutes an especially good feature for a family magazine. A department to be known as "From Main Line and Branch," by Philip Morehouse, and which will be devoted to the interest of the men and women of the railroad world who have attained prominence in one way and another, is also to be conducted. In addition to the foregoing there are several short stories by G. W. Ogden, J. A. Werner and Grace Livingston; also, something about the "Katy-did," of which J. F. Conrad writes as "an insect of pernicious activity." The Iron Trail is nonpartisan and nonsectarian. The subscription price is $1.00 per year, or ten cents a copy.

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Proper Use of the English Language.

A vest pocket edition of a most useful and valuable work, entitled, "Faulty Diction, or Errors in the Use of the English Language and How to Correct Them," by Thos. H. Russell, LL. B., editor-in-chief of Webster's Imperial Dictionary, has recently been published, a copy having lately reached the Editor's desk. The work is not laden down with tedious rules, but goes right into the subject and treats of words and expressions that are right and wrong to use under varying circumstances.

For instance, relative to the words "bring, fetch, carry," it says:

"Erroneously used as interchangeable, and care should always be taken in discriminating between them. To bring is simply to take with oneself from the place where one is; to fetch is to go first to a place and then bring a thing; whatever is near at hand is brought; whatever is at a distance must be fetched; the porter at a hotel brings a parcel, a boy who is sent for it fetches it. Bring always respects motion toward the place in which the speaker resides; fetch, a motion both to and from; carry, always a motion directly from the place or at a distance from the place. A servant brings the parcel home which his employer has sent him to fetch; he carries a parcel from home. Bring is an action performed at the option of the agent; fetch and carry are mostly done at the command of another. Do not say, 'When you come home, fetch some berries,' but, 'bring some berries.' Say, 'Fetch me my hat from the hall,' and 'carry your umbrella with you.' The distinction between bring and fetch is sharply drawn in this passage: 'And as she was going to fetch it, he called to her and said, "Bring me, I pray thee, a morsel of bread." '—I Kings xvii, 2."

It says in its introduction:

" . . . . In the pages that follow many examples of faulty diction are set forth, and in each case the changes required to correct the faults are indicated for the behoof of those who would improve their daily speech or their mode of writing. In other words, the faulty diction of the street and the correct diction of the cultured are here set side by side, that they who wish to pass the gulf may do so."

To a person having any doubt as to the proper use of a word or phrase, particularly if in a hurry to determine same, this little book must necessarily prove of the greatest value. The book can be had, cloth binding, for 25 cents a copy, and leather, 50 cents, by addressing Geo. W. Ogilvie & Co., publishers, Chicago, Ill.

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*For Better City Government.**

Reform, like charity, should begin at home. National issues should not interfere with the prosecution of all needful reforms in our municipal affairs. A very encouraging sign of the awakening of the people to their civic duties is found in the general movement for municipal reform and better city government throughout the country. This is evidenced by the formation of "Good Government" clubs, "Civic," "Municipal" and "Voters'" leagues throughout the various cities of the country, the object being to study and watch municipal affairs, to find out the real facts, to note the policy and attitude of the city officials, to take note of the official members of the city government, and to institute careful inquiries into the antecedents of all candidates for city offices, commending or condemning, as public policy may require—and to remember.

It is coming to be better understood that municipal government is a purely business affair, which should not be complicated or hindered by admixture with national politics. A city is a corporation composed of its citizens, who are also its stockholders. Partisan politics should, therefore, have no place in municipal elections. What a candidate may think of the policy of "expansion," or "free trade," or "protection," is, and should be, a matter of indifference to the intelligent voter for municipal offices. It is impossible to have an honest administration of municipal affairs while we are compelled to accept party nominees and allow partisan politics to determine for whom we shall vote. The reason for this is apparent. City and county offices are made the spoils and reward for activity in partisan politics. The "ward heeler," who manipulates the primaries, and the other "bosses" and "workers" who look after the interests of the "gang" and the "push," and so kindly take charge of our municipal elections, are not exercising their wind and muscle exclusively for their health. True, they do not usually work for a stipulated sum. They only receive their reward when their side wins. The party leaders pay their political debts by providing the "gang" with employment in the minor positions in the city government, as the proper reward for party success. The incumbents and their assistants, knowing their election or appointment was not necessarily due to merit or qualification on their part, naturally look upon the office as a political perquisite, and, knowing their tenure of office is limited, generally endeavor to "make hay while the sun shines."

Another thing: Salaries paid local officers are often extravagantly high, but they are made high purposely, for it is well understood that candidates or the incumbents of those offices are expected to foot all the bills for the local elections, and also "come down" handsomely towards the expenses of the "party" in general elections.

Under such conditions first-class business men of high character refuse to become candidates for city offices. They refuse to adopt the usual method of wire-pulling, dickering and soliciting votes that obtain under our present corrupt system. To get the best man we must have the whole city and all the political parties to choose from. To limit our choice to the men available in one party would, even under less corrupt conditions, be foolish.

It is notorious that American cities are the worst governed cities in Christendom. Corruption, extravagance and misgovernment is the almost invariable rule. The cities of Birmingham, in England; Glasgow, in Scotland; Paris and Berlin, and, indeed, cities everywhere on the continent, are models of efficient and honest government.

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*By W. H. Stuart.

The merit system on the continent in municipal appointments is universal, and municipal ownership or control of public utilities largely prevails, is everywhere successful, and proves a great improvement over private management. Not only is the cost of service reduced, but also the condition of the employes is improved, and the service better and more satisfactory in every respect.

The principal cause of municipal corruption in America is the fact that, contrary to the European rule, private ownership of public utilities prevails. There is, consequently, a continual struggle among unscrupulous and competing capitalists to acquire public franchises, or for extensions of the same. The efforts to obtain them, and the shameful bribery and corruption used very often for this purpose, is the scandal of American municipal government. The threatened action of the Chicago Board of Aldermen in extending existing franchises fifty years without compensation to the city, and the assistance of the State Legislature in making it possible, is a case in point.

The private ownership of public utilities, such as water, gas, electric lighting and power plants, municipal transit systems, etc., places immense power in the hands of those corporations who control them. When their interests are affected they are often able to wield such power that only their subservient tools have any chance of election. The tendency of business interests to engage in getting hold of the political machinery of parties for corrupt municipal purposes finds apt illustration in the history of every large American city. The corruption of municipal politics all over the country arises very largely from the blind attachment of voters to the national parties. The corporations, recognizing the force of that habit, make it their business to get control of the party machines. The interests of the private corporations are so enormous that men who are elected in the belief that they can not be purchased—their previous reputation giving such assurance—fall a more or less easy prey to the corrupt influences to which they are at once subject. There is no probable solution to the problems so presented except the public ownership and operation of all public utilities.

Prof. R. T. Ely, who expressly disavows being a Socialist, says: "So far as those pursuits are concerned which we call natural monopolies, it seems to the present writer that the goal which we should aim to reach ultimately is public ownership and public management. The decisive considerations are by no means merely economic in their nature, but are broadly social, or, to use a current expression, sociological. The economies which might be effected, and the other economic advantages which might be secured by public ownership are by no means to be despised. Those economies and advantages are quite like those which serve as the incentive in the formation of trusts and combinations; but there is this difference, that, whereas in private monopoly these gains and privileges accrue to a few managers and owners of the stock, in the case of public ownership it would fall to society at large. President Eliot, of Harvard University, has in a recent article pointed out how the liquor business necessarily becomes a corrupting element in politics, on account of the efforts to control it. Those who are controlled attempt to defeat the ends of control, and they enter politics to do this. What he has described with respect to the liquor business holds with every business which it is endeavored to control. When the number of businesses increase largely the corruption becomes more widespread, and the difficulties become infinitely greater. The evolution of society has made the old idea of simple government inapplicable to present conditions. As our life is complex, our government must elaborate. This is in the very nature of things, and can not be avoided. The development of private control, as opposed to public ownership, does not simplify, but rather complicates government, and renders it more difficult, not easier, than direct ownership and management of monopolistic business."

As to the facts of the advantages, both economic and social, of public ownership, there is no room for doubt. Dr. Albert Shaw, in his work, "Municipal Government in Great Britain," says: "It is almost the universal testimony in Great Britain that the municipal gas enterprises are a brilliant success. They have steadily reduced the selling price and largely increased the consumption. Their management has been as efficient and economical as that of the private companies. They have been able, while selling gas at a low price, to pay expenses and interest, accumulate sinking funds, enlarge the plants and make good all current depreciations, and still pay net profits into the municipal treasuries. The price in the large towns is generally from 50 cents to 75 cents per 1,000 feet. The net profits are, in most places, kept low by reductions in price whenever they tend to become considerable. But when the initial cost of the works has been paid off, it will manifestly be feasible to maintain prices and to pay into the town treasuries the large sums that now go to sinking fund and interest account; and then the gas works will be very productive property."

Our own country furnishes numerous examples of the advantage of public over private ownership of municipal utilities. Thus, for instance, Wheeling, W. Va., in 1871, bought out the private gas company. They have paid the original cost of the works, and their subsequent almost entire renewal, and reduced the cost from $3.50 per 1,000 feet, the price charged by the private company, to 75 cents per 1,000, and in addition turned nearly $2,000,000 into the public treasury as pure profit.

Duluth has reduced the price of gas from $1.90 per 1,000, under private control, to 85 cents, under municipal management, and does so at a profit.

In electric lighting our experience runs in the same direction. I have before me a list of American cities that have changed from private to public ownership. Under private ownership, the cost per lamp for street lighting varied from $378 per annum, in Fairfield, Ia., to $110, in Bay City, Mich. Under public ownership the prices were reduced, ranging from $96, in Chicago (former price, $250), to $27 in Manhatton, Ia. (former price, $125). Imagine a city one year paying a private company $200 or $300 for a street lamp, and the next year making the light itself for from $40 to $70. The question naturally arises: "How is it that public plants are able to make such tremendous savings?" The reasons are many. Here are some of them:

1. A public plant does not have to pay dividends on watered stock.

2. It does not have to pay dividends on the actual investments.

3. It does not have to retain lawyers or lobbyists, or provide for the entertainment of councilmen, or subscribe to campaign funds, or bear the expense of pushing the nomination and election of men to protect its interests or give it new privileges, or pay blackmail to ward off the raids of cunning legislators and officials, or buy up its rivals, etc.

4. It does not have to advertise nor solicit business.

5. It is able to save a great deal by combination with other departments of public service.

6. Public ownership has no interest to pay after the plant is paid for.

With such facts and figures before us as to the advantage of public ownership—and the facts and figures are easy of access to any intelligent inquirer—we are justified in assuming that those who oppose these reforms are either inexcusably ignorant, or are the paid retainers of the boodlers who prey on municipal rottenness and corruption.

It is sometimes urged that the extension of municipal control would merely furnish new sources and means for further corruption. It may be replied, however, that public management is more free from dishonesty and inefficiency than private business. Not only is public business transacted more efficiently and with greatly decreased cost, but the public employes are always better paid and more certain of permanent employment. Who ever heard of public employes going on a strike? If they have a real grievance it is usually promptly removed. Besides, if you want to make the average voter take an active interest in civic affairs, nothing would be more effective than the difference in his monthly gas, water, electric light or power bills, as between efficient and inefficient public management. Dishonest or inefficient public officers would find themselves "snowed under" at the next election, or, if the "right of recall" was embodied in the city charter, the unsatisfactory official or officials would be promptly removed from office. The voter's pocketbook would be hit, he would vote "early," and regret that he could not vote "often," to displace the unsatisfactory directors of the civic corporation.

The possibility of misgovernment by our representatives, who, after election and during their term of office are beyond the control of the electors, emphasizes the need of business methods in the conduct of a civic corporation in which the voters are the stockholders. No private corporation would turn over its business management for a term of years to irresponsible agents without reserving the right to direct the policy of the corporation and remove dishonest or inefficient managers. No more should the city. Therefore, the principle of direct legislation should be embodied in every city charter. This means that the voters should have the right, on the demand of a certain percentage of the voters, to propose new legislation to be presented to the whole body of qualified electors at the next election, or at a special election called for the purpose, which, if approved by a majority of the voters, would become law. This would be the initiative. In addition, the right of the referendum, i. e., the right of the voters to accept or reject legislation passed by their representative, upon a similar petition, before the legislation became operative. If to this is added the "right of recall" by which an office may be declared vacant and a new election held upon petition of a large number or percentage of the voters, our municipal corporations would be managed on strictly business principles.

There is another reform of the greatest importance, viz., the enforcement of the law that requires all property to be assessed at its "fair cash value." In regard to personal property, there is admittedly great difficulties in its enforcement. But there is a very flagrant violation in the law by the difference in the assessment of vacant as compared with improved land.

Vacant land is nearly everywhere underassessed. This differential assessment in favor of vacant land gives great encouragement to the "vacant lot industry," and permits private monopolization for speculative purposes until increase in business and population forces the landless to pay the land grabber for his "enterprise and foresight" in grabbing everything in sight, and retaining it by a low assessment rate until growth of population makes his land valuable and himself rich. A vacant-land owner, as such, produces nothing. He is a mere parasite. The "unearned increment" which he pockets is due exclusively to the presence and industry of others. Increase in land values or rent adds nothing to the real wealth of a city or nation. It is simply an enforced tax on labor. The actual assessment of all land, vacant as well as occupied, upon its real site value, would force the vacant-lot owner to improve his property or pay taxes on its selling value. It would make it easier for the business man to build, or the working man to own his own home.

Another injustice is often done by the vacant-lot owner. When it suits his purpose he can often force street improvements on actual occupiers, which frequently means virtual confiscation of the land of the poor owner, while again, when the vacant-land owner desires to keep his land out of the market for further speculative purposes, he is often able to thwart the desires of the actual occupiers for present improvements.

Another thing: We are aware of the custom among the bankers of annually turning their taxable assets into nontaxable United States bonds, and thereby evade their fair share of taxation. Men of wealth are too prone to evade their fair share of the cost of a government whose main duty is to defend and protect their property. It should be our earnest endeavor to reverse this order of things and compel the wealthy classes to pay for that protection, without which their wealth would soon vanish.

Every municipality should conduct a free labor bureau, so that the unemployed could be assisted in procuring work, and not be left a prey, as they frequently are, to unscrupulous employment agencies. Not only this, but it should be the recognized duty of every municipality to furnish unemployed men with at least temporary work. Every city of considerable size should own some hundreds of acres of land, with tools, workshops and suitable dwellings, where those able to work, but unable to find it, could at least be able to make a living until a better opening was presented.

There is no valid reason why every city of 5,000 population or over should not do all the city public work—the grading and paving of the public streets, the building of sewers, the street sweeping and sprinkling, the collection and disposition of garbage, and other city work—under the direction of the proper city officers. This is no longer an experiment. The London County Council find they can pay the union scale of wages, have the work done better, and still save large sums over the former method of letting public work under competition to private contractors.

Every city should also own and operate its own telephone service. The existence of two separate telephone companies, necessitating two different telephones in business houses and residences, is both stupid and wasteful.

Nor is there any reason why each municipality of sufficient size should not do their own fire insurance, and the larger cities their life insurance as well. With the great saving that would be effected in rent, salaries, solicitors, commissions, cost of advertising, etc., it would be possible for cities to furnish their citizens with absolutely secure insurance for half the rates now charged by private companies.

As a means of effective municipal reform the writer is in hearty sympathy with the proposition to increase the power and authority of the mayor. While a democracy presupposes a people sufficiently intelligent and active in the exercise of their civic duties and vigilant in selecting only capable and honest representatives, yet, in practice it is very difficult for the average voter to keep himself intelligently informed regarding the character and qualifications of the various candidates for his suffrage. The average business man finds it cheaper, or thinks he does, to pay an increased tax rate to cover losses through negligent or fraudulent management of civic affairs than to devote much time to the careful performance of his civic duties. Hence, in our large cities the management of municipal affairs is attended to by a "boss," who, for a liberal percentage of public plunder, is willing to relieve the busy or indifferent voters of the responsibility of attending to their business as stockholders in the civic corporation. The party "machine," under the direction of the "boss," manipulates the caucus and primaries, runs the party conventions and names the candidates, leaving the voters the perfunctory duty of recording their votes for a set of men many of whom they never heard of before, with possibly not one name on the ballot sheet with whose character or qualifications for the office they are familiar. Certainly the plan of concentrating power on some citizen well known for probity and capacity, and holding him personally responsible for the efficient and economical administration of the city's affairs through his subordinate heads of departments, has great advantages over the usual system of diffused authority, or rather want of it. Nor is it an untried experiment. Various cities have tried the plan with satisfactory results.

The election of councilmen-at-large knocks out the ward heeler, and gives the honest voter a chance to vote for honest men, instead of the nominees of the ward "boss."

The adoption of civil service methods in the selection of the minor officials and employes in public service would insure the retention of careful and competent men.

With the adoption of the reforms indicated we will have solved, in a great measure, the problem of municipal government, and paved the way for the solution of those great national problems which are now engaging the attention of every intelligent lover of his country and of democratic institutions.

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The Western Homeseeker.

The Magazine is in receipt of the first copy of "The Western Homeseeker," a monthly magazine of 32 pages, 13½x10½ inches, well printed and extensively and appropriately illustrated, its cover being of heavy paper, highly finished, and well designed. In its salutatory it thus explains its presence in the literary world: "The Western Homeseeker, in making this, its initial appearance, believes that its existence is justified because of the mission it feels that it can perform—a mission which must be performed by some publication, if the signs of the times are not wholly misleading.

"The publishers of the Western Homeseeker have the deepest of conscientious convictions that 'opportunity does exist in the West.' It has so existed since the Star of Empire first began taking its course westward. No portion of the United States today presents such large opportunity as the West. There is not, at the present time, a single publication, East or West, which endeavors to show the stranger where a specific opportunity exists, though many assume to perform this mission regarding certain localities, because of the financial gain which this course offers.

"The 'mission' of the Western Homeseeker is to keep pace with these varying and recurring opportunities by an intelligent effort to show the stranger, looking for better conditions than he now enjoys, where specific opportunity peculiarly exists for him—opportunity that fits each individual case. The reader is the best judge, after facing the opportunity, whether this opportunity or that opportunity is best adapted to his needs, his means, his hopes and his ambitions.

"The Western Homeseeker, conscious of its possibilities and fully realizing its solemn duty in performing its 'mission,' submits its first issue to a critical public with no excuses, leaving the public to decide how well it has started upon its career of education in the face of obstacles which confront all first-born things—animate and inanimate. We hope that its destiny will lie in the direction of its preordained mission—the intelligent upbuilding of the valleys of the West."

It treats extensively of interesting features and historical occurrences incidental to certain Indian reservations in articles well written by able authors, and discusses editorially and through contributors the development and great future possibilities of the region in the interest of which it is published. Under the title of "Spirit of Homestead Laws" can be found some very interesting and valuable educational reading on this important subject. In addition to the foregoing it intelligently discusses the mining, agricultural, stock raising, dairying and many other industrial features of the section of country it specifically represents. The Western Homeseeker has started on its "mission" with an apparently thorough equipment for its successful performance. Its subscription rates are $1.50 per year; six months, 80 cents. Address The Western Homeseeker Publishing Company, H. C. Freeman, managing editor, Missoula, Mont.

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Increase in Minimum Percentage of Power Brakes.

As this issue of the Magazine goes to press the hearing ordered by the Interstate Commerce Commission for the purpose of determining as to the increase of "power brakes to be used and operated in trains on railroads engaged in interstate commerce" is being held, and the advocates and opponents of the proposition are earnestly contending for and against it. It is to be hoped that this hearing will result in the universal equipment of all cars in all trains with air brakes, and their compulsory operation, as this is the only sure preventive against trains "buckling" and the horrible consequences liable to ensue from such occurrences. The formal announcement of the hearing by the Interstate Commerce Commission, as issued by its Secretary, Hon. E. A. Moseley, is as follows:

At a General Session of the Interstate Commerce Commission, held at its Office in Washington, D. C., on the 19th day of October, A. D. 1905.

Present: Hon. Martin A. Knapp, Chairman; Hon. Judson C. Clements, Hon. Charles A. Prouty, Hon. Joseph W. Fifer, Hon. Francis M. Cockrell, Commissioners.

The matter of requiring an increase in the minimum percentage of power brakes to be used and operated in trains on railroads engaged in interstate commerce as provided by Section 2 of the Act of March 2, 1903, being under consideration; and the Commission by its order of August 11, 1905, having called upon all carriers subject to the Safety Appliance Act to report on or before October 1, 1905, the number and percentage of freight cars equipped with power brakes and given notice of its intention to set the matter of increasing the present minimum percentage for hearing, with a view of issuing an order requiring an increase of such minimum percentage, if such an order shall appear justified by the statements and testimony presented:

It is ordered, That a hearing of this matter be held by the Commission at its office in the city of Washington, D. C., on Thursday, November 2, 1905, at 10 o'clock a. m., at which time and place all persons interested will have opportunity to be heard, whether for or against increasing the minimum percentage of power brakes to be used and operated in trains, and may appear in person or by counsel and file any affidavit, statement, or argument bearing upon the question to be determined.

A true copy. EDW. A. MOSELEY,
Secretary.

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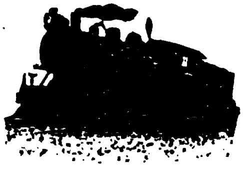

BROTHERHOOD OF

LOCOMOTIVE FIREMEN'S MAGAZINE

BROTHERHOOD DEPARTMENT

Another Word to the Wise

Under the caption of "A Word to the Wise" the Brotherhood of Locomotive Engineers' Journal reproduces in its November number the greater part of the editorial bearing that title in the October issue of the Magazine and indulges rather extensively in criticisms and comments thereon. The Journal regrets the possibility that the publication of the fact that differences exist between the two organizations may prove a source of "edification" and "satisfaction" to "those not of us." It claims to discover a spirit of vindictiveness in the said editorial as well as in Bro. Maier's article also appearing in the October issue entitled "The Question of Jurisdiction, or a Victory for the Open Door," and then states that "if the B. of L. E. would do just what the B. of L. F. wanted them to do" and let the B. of L. F. do just as they pleased in encroaching upon the "natural province" of the B. of L. E. "there would probably be that peace which the Magazine desires."

Cites Ancient History.

The Journal then with a view to demonstrating that the B. of L. F. was originally to blame for the present controversy goes clear back to 1884 and states that the men holding membership in both organizations endeavored to control their San Francisco Convention, and that they succeeded to such an extent that the enactment of legislation desired by "the B. of L. E." was almost impossible, and in fact could not be passed until the last day's session, as nearly half the delegates were members of both Orders at that convention. Part of that legislation consisted of a law providing "that no member of the B. of L. E. who is also a member of the Brotherhood of Locomotive Firemen shall be eligible as a delegate to the Grand International Division, Brotherhood of Locomotive Engineers." The Journal then asks who was the aggressor in this instance and if the B. of L. E. was to conduct business in the interests of those it represented what else was left for them to do, and then asserts that these conditions were met with the only cure, viz., the election of members of the B. of L. E. with "undivided allegiance" to make laws for engineers.

It then says that the next step taken in this direction was that of the following Convention in 1885, when an addition to the qualification for membership in the B. of L. E. was enacted providing that an applicant should not at the time of his election be "a member of any other labor organization."

An Uncalled-for Reminder.

The Journal then gives voice to the oft reiterated statement that the "B. of L. E. has always stood for the absolute maintenance of contractual relations with every employing company who would make contracts," and, hence, the adoption of the constitutional provision that applicants for membership must not be elected thereto if a member of any other united body of wage-earners.

Quotes Bro. Carter.

The Journal then, in support of its arguments against mixed membership, quotes from a letter written to the Magazine by Bro. W. S. Carter, our present Grand Secretary and Treasurer, appearing in the January, 1894, issue, as follows: "The lack of harmony between labor organizations can be ascribed to three causes. First, personal ill-feeling between representative grand officers. Second, mixed organizations infringing upon class organizations. Third, trivial incidents that will arise just as long as man's inhumanity to man is a characteristic of Adam's progeny." It next quotes the following from an editorial by Bro. Carter and appearing on page 128 of the February, 1896, issue of the Magazine: "Class organizations are the only labor organizations that will endure. The printers, the carpenters and the brick layers are going uphill, while organizations based on the principles of the A. R. U. are going downhill," and asserts that "that is just what the B. of L. E. has thought of dual obligations."

Crosses Ocean for a Comparison.

The dual organization of engineers and firemen in England is then referred to as a failure, our esteemed contemporary claiming that said organization, although nearly as old as the B. of L. E. itself, has failed in materially advancing the interests of its members up to the present time, and also that another "mixed" organization including all classes of railroad men, viz., the Amalgamated Society of Railway Servants of the British Isles, has fared no better. It then says that a writer in the Locomotive Journal of Leeds, Eng., in the issue of October, 1905, after discussing conditions of "'we railroad slaves' I may call ourselves," tells what the Spinners have accomplished and asks "Why?" "Simply because they are combined in their own particular union to a man. The Spinners do not quibble about the combination of all the workers in the mill, they simply join their own society and believe in their own strength. To all locomotive men I would say 'go thou and do likewise.'"

The Journal then criticises the Grand Master's Official Circular No. 7 and states "unhesitatingly" that same emanates from a "vindictive" spirit.

Expels a B. of L. F. Man.

It cites the case of Bro. Donnelly, stating that he (Bro. Donnelly) had been EXPELLED from Division 251 of the B. of L. E. because he had joined the B. of L. F. and that the legal department of the B. of L. F. enjoined the said division from expelling the said Bro. Donnelly and that in order to get standing in court our General Counsel declared that the B. of L. F. "is not a labor organization," and that animus was clearly shown in this attempt to interfere and annoy the B. of L. E.

Relative to Securing Members.

The Journal then makes a declaration to the effect that they are not coercing B. of L. F. engineers to join their ranks and states that no man is compelled to sign their application and that he knows full well when he does sign it the provisions contained in it. It cites part of the B. of L. E. application as follows:

Proposition for Membership.

In the Brotherhood of Locomotive Engineers.

To the Officers and Members of Division No. ——————:

I, the undersigned, being a Locomotive Engineer —————— years' experience, running on the —————— railroad, —————— years of age, can read and write, residing in the —————— of ——————, do hereby offer myself as a candidate for the mysteries of the Brotherhood in your Division. I am not a member of any other labor organization except ——————, and I agree, if admitted, that I will withdraw from all other labor organizations within ninety days from the date of my initiation into the B. of L. E. and will abide by and conform to all the provisions of the Constitution and By-Laws of the Order, and will take out and carry one or more policies in the B. of L. E. Mutual Insurance Association.

It then denounces a man who will sign the above application with the intention of disregarding its provisions and criticises the action of the B. of L. F. in defending such "palpable fraud." It reiterates that the interests of both Orders can be easily conserved by "each belonging to the organization his work represents," regardless of what his individual wishes or judgment on this point may be.

Blames B. of L. F.

In criticising Bro. Maier's article the Journal goes clear back to 1886 to find a pretext upon which to justify the closed door policy of the B. of L. E. and cites a case occurring on the Erie road wherein the B. of L. F. committee were composed largely of engineers, the said committee successfully contending against the hiring of engineers and in favor of promotion of firemen, which it seems occasioned the appointment of a committee by the Atlanta Convention for the purpose of negotiating with the Cincinnati Convention of the B. of L. F. in 1892.

Criticises Individuals.

The Journal then indulges in personalities against Bro. Maier, questioning the sincerity of his motives, and after reiterating against him the accusation of vindictiveness it launches into a denunciation of members of the B. of L. E. who, having signed the application hereinbefore referred to, still desire to hold membership in both brotherhoods, which it terms "a violation of their word of honor." and after declaring that the B. of L. E. will continue to put in force the objectionable laws contained in its constitution discriminating against the B. of L. F., it concludes with the peculiar announcement that the Brotherhood of Locomotive Engineers is not unfriendly to the Brotherhood of Locomotive Firemen.

In reply we beg to say that the B. of L. E. Journal can no more deeply regret the "publicity" essential to the proper and permanent adjustment of the prevailing differences between the two Orders than do we deplore the existence of those differences, and inasmuch as the B. of L. E. has it exclusively within its own power to effectively and permanently remove all causes to which the present friction is attributable, no one will be more pleased when they decide to do so than the membership of the Brotherhood of Locomotive Firemen.

Position of the Magazine and Our Grand Officers.

The B. of L. F. is primarily and essentially a protective organization. Its mission is to "protect" its members and advance their interests, industrial and otherwise, and when those interests are being assailed, particularly by underhanded methods, it becomes the duty of the Magazine as the official organ of our Brotherhood to familiarize our membership with conditions as they exist that they may be the better enabled to act in their own defense, and it proposes to exert every influence at its command with a view to averting any danger from any source which may threaten them. This is a duty for the performance of which the Magazine has no apology to make, and if others than those to whom its message of warning and protest is directed become familiar with the contents of that message and derive "great satisfaction" therefrom, the consequent responsibility must rest with those who created the conditions responsible for its issuance. The Magazine, secure in the justice of the cause it is defending, has nothing to hide and our Brotherhood has nothing to fear from the greatest possible publicity that can be given its expressions.

As to the accusation that a spirit of vindictiveness actuated any of the Grand Officers of the B. of L. F. in assuming their present position relative to the jurisdiction question and the arrogant discrimination being practiced by the B. of L. E. against our membership, let it be known that this entire question was given the most careful consideration in all of its phases and every circumstance connected with it carefully weighed by them before any steps were decided on, and that had the wishes of the members of our Brotherhood whose interests were and are being directly affected by the course of the B. of L. E. adjustment committees acting in conjunction with the Grand Officers of that organization been complied with, the publicity so "regretted" would have been given the matter long before it was.

Where the B. of L. F. Stands.

Now as to the assertion that if the B. of L. E. would do just what the B. of L. F. wanted them to and let the B. of L. F. do just as it pleased in encroaching on the "natural province" of the B. of L. E., we would say that the only thing on earth that the B. of L. F. wants the B. of L. E. to do is to attend to its own business and leave it (the B. of L. F.) free to perform its duties and exercise its own prerogatives. The "natural province" of the B. of L. E. or any other organization similarly constituted is to protect its own members and not undertake to dictate to other labor organizations what their attitude shall be toward their membership. It has no right to interfere with the honorable affiliations of any man connected with it because of his identity with any particular occupation whatsoever. At least, its assuming such an attitude is certainly widely at variance with the "open shop" principles so extensively and vigorously advocated and defended by its Grand Chief and constituting one of its most widely advertised and boasted policies. If obedience to the laws of the land in the matter of fulfilling its obligations to the men holding membership in its ranks, as long as they continue to comply with all of the requirements of such membership, and performing its moral duties toward them to the best of its ability constitutes an "encroachment" on the "natural province" of any organization or individual, why, then, the B. of L. F. must, of course, plead guilty.

San Francisco Convention of the B. of L. E.

The Journal's reference to the San Francisco Convention and the proceedings thereof is simply an acknowledgment on its part that the organization is controlled by a faction rather than by the membership at large. Let us stop to consider the admission the Journal makes relative to this particular gathering. It says that men holding membership in the B. of L. F. and B. of L. E. endeavored to control the San Francisco Convention and that they succeeded to such an extent that legislation such "as the B. of L. E. desired" was almost impossible to enact and that a law was finally passed by that body depriving the B. of L. E. men holding membership in the B. of L. F. of the right to act as delegate at B. of. L. E. Conventions. Who at that time constituted the B. of L. E.? Were not those so-called dual members regularly elected and authorized representatives of their respective divisions, and in the free exercise of their duties as such? Then why should a distinction be made between them and "the B. of L. E.," as an institution, while they and the men they represented constituted such an important part of it? The admission of the Journal on this particular point clearly bears out the truth of the statement contained in an article appearing elsewhere in this issue, entitled, "A B. of L. E. Man's Protest."

The Journal freely admits that the retrogressive element opposing the dual membership delegates gained the ascendency at the San Francisco Convention referred to, and it would appear that they have held control ever since, through the enactment of the law arrogating to themselves exclusively the right of representation in the legislative body of their organization, from which fact all interested should bear in mind that it is not the B. of L. E. as a unit that is hostile to our Brotherhood, but a certain faction in that Order, which, unfortunately, at the present time, directs and controls its actions. That the views of the "dual membership" delegates at the San Francisco Convention of the B. of L. E., particularly in view of the fact that they apparently acted unitedly, should have been accorded so little respect and proscriptive tactics adopted and enforced against those advocating such views is but another incident in the history of the human family where tyranny has triumphed (temporarily, let us hope, however) over the right to express and defend conscientious conviction. There is much of the spirit of intolerance in the differentiation by the Journal between those delegates as a class and the B. of L. E. as an institution, inasmuch as the said delegates constituted a very important component part of its grand division on the occasion referred to.

In reply to the question as to who was the aggressor in this instance? and if the B. of L. E. was to conduct business in the interests of those represented? would say that we can not see that there was any aggressor, as the said delegates were acting in accordance with their honest convictions and represented men in possession of the full rights of membership in the organization. Why the performance of their duties in the premises should be specified as an "aggression" is not clear and never will be understood only by those who feel that liberty of action on the part of others should be confined to that narrow scope constituting their own conception of right and wrong.

As to Contractual Obligations.

We beg to remind our contemporary that "contractual" obligations are just as sacred to and as rigidly observed by other organizations as by the B. of L. E., and that it is about time the idea should be abandoned that the said organization possesses a monopoly in this specific characteristic. The action of some of the Grand Officers of the B. of L. E. in this particular is strikingly similar to that of a child who, having given expression to something "cute" and created amusement and commanded attention by so doing, says the same thing over and over in the belief that it will prove as interesting to its hearers each time it is repeated as it did the first. There is as much sense in the reiteration of this boast as there would be in the action of an individual, whether man or woman, who would wear emblazoned on the person a list of his or her virtues. Contractual obligations are held just as inviolable by the B. of L. F., the B. of R. T., the Switchmen's Union, the Order of Railway Telegraphers, the Typographical Union and other organizations that could be mentioned by the score, as they are by the B. of L. E., and no particular credit is due any of them by virtue of that fact, and as to the relations of the B. of L. E. with the Knights of Labor in former years, let it be said that it is to the best interests of the labor movement that same be allowed to remain buried with the oblivious past. Has the B. of L. F. ever directly or indirectly done any act that in the most remote degree might have the appearance of a tendency to cause the B. of L. E. to break any contract?—on the contrary it has helped that organization to secure some of its best contracts and given it every support. The members of the B. of L. F. have given up their jobs to assist the B. of L. E. on more than one occasion, and in 1888 many members of the B. of L. F. left their engines to assist the B. of L. E. in repelling discrimination against its members by a certain railroad company and it stood by the B. of L. E. to the end in that memorable struggle, emptying its treasury and levying assessment after assessment upon its members. Is all this forgotten?

Mixed Organizations and Class Organizations.

Now, as to the quotation reproduced by the Journal from Bro. Carter's letter in the January, 1894, issue of the Magazine, in which "personal ill feeling between representative Grand Officers" and "mixed organizations infringing upon class organizations" are mentioned as two of three causes to which can be ascribed lack of harmony existing between labor organizations, and the quotation taken from an editorial written by the same brother in his former capacity as Editor and Manager of the Magazine, and appearing on page 128 of the February, 1896, issue, which says:

"Class organizations are the only labor organizations that will endure. The printers, the carpenters and the brick layers are going uphill, while organizations based on the principles of the A. R. U. are going downhill."

Let it be said that as far as the Grand Officers of the B. of L. F. are concerned there is absolutely no PERSONAL ILL FEELING entertained towards any one on account of the present controversy, much less the Officers of the B. of L. E., and there is no set of men that will more warmly welcome the establishment of conditions precluding the possibility of such an inference than those who today fill the Grand Lodge Offices of the B. of L. F. THERE IS NOT A MEMBER OR AN OFFICER OF THE B. OF L. E. TO WHOM THEY WOULD NOT GLADLY EXTEND ANY EXPRESSION OF GOOD WILL, PRACTICAL OR OTHERWISE, WITHIN THE LIMIT OF THEIR POWER TO BESTOW. THEY ARE FIGHTING FOR A PRINCIPLE AND REGARD IT AS A CONSCIENTIOUS DUTY THEY OWE THEIR ORGANIZATION TO UPHOLD AND DEFEND THE RIGHTS OF ITS MEMBERS TO THE FULLEST EXTENT OF THEIR ABILITY. All references of a personal nature have, as far as effective argument would permit of, been and will in the future be avoided. Closer and more cordial relations with the B. of L. E. than those existing in the past are to the best interest of both organizations, and it is with a view to the ultimate establishment of such relations that the Brotherhood of Locomotive Firemen proposes to make absolutely clear to the Brotherhood of Locomotive Engineers the conditions on which that end can be attained. It is to be hoped that in the performance of this duty no member of either organization, whether holding office therein or not, will be so narrow or biased as to permit the advocacy of reform, no matter how vigorous, to disturb pleasant personal relations heretofore prevailing.

Now as to mixed organizations infringing upon class organizations and as to the contention of the Journal that the inefficiency of the dual organization in England known as the Associated Society of Engineers and Firemen is attributable to joint membership of engineers and firemen in the same union, would say that an organization so constituted is not a mixed organization, as it is composed exclusively of men in the same line of occupation—the position of engineer being simply an advancement along that line. The success of the men classified by virtue of their occupation as enginemen is so utterly dependent upon mutual co-operation that any tendency toward radical discrimination or inharmonious relations between them must necessarily be suicidal to the industrial interests of both. The modern system of progressive examination familiarizes the fireman with the duties of the position of engineer so long before the opportunity arrives for his actual advancement to that position that in the majority of cases the locomotives of our country are today manned by two enginemen, the duties of one being to generate the steam and of the other to use it; the responsibility in the matter of train orders being on many of our large systems equally divided between them. As to responsibilities in other directions let it be said that the time has long since passed when the fireman subjected himself to the danger of having his knuckles cracked while trying the water gauges, or being otherwise reprimanded for such presumption. The enginemen of Great Britain and Ireland who are organized belong to two different railway unions, or "societies," as they are called in those countries, viz., "The Associated Society of Locomotive Engineers and Firemen" and the "Amalgamated Society of Railway Servants." The former consists of engineers and firemen exclusively; the latter is composed of all classes of railroad employes, including engineers and firemen. There has been more or less contention between these two organizations. The Associated Society of Engineers and Firemen hold that all those of their calling belonging to the Amalgamated Society of Railway Servants should withdraw from that body and join the enginemen's organization, and the writer in the Locomotive Journal, of Leeds, who is quoted by the B. of L. E. Journal, meant when he said "to all locomotive men I would say, 'go thou and do likewise,'" that all locomotive enginemen, by which he means firemen and engineers, should belong to the same organization together, viz., The Associated Society of Locomotive Engineers and Firemen. There has never been amongst the enginemen of Great Britain and Ireland any question whatever as to the advisability of engineers and firemen being banded together in the same organization, the main contention of those so organized being that all engineers and firemen, or as they term themselves, "locomotivemen," should be thus united, instead of a part of them belonging to another organization comprising in its membership all other classes of railway employes.

Bro. Carter on the Situation.

Inasmuch as the Journal has undertaken to quote our Grand Secretary and Treasurer, Bro. Carter, in support of its arguments, it will be of interest to our membership to learn of his views on the particular and specific question at issue. For that purpose we reproduce from an editorial entitled "Let Us Have Peace," written by our worthy Grand Secretary and Treasurer as former Editor and Manager of the Magazine and appearing in the August, 1902, issue, page 277, the following extracts:

"While no official information has reached the Magazine concerning the matter, a rumor says that the B. of L. E. has enacted laws that will not only attempt to force all locomotive engineers into that organization, but compel them to withdraw from the B. of L. F. within three months.

"This is a matter that deserves the earnest and most careful consideration of the Delegates at the Chattanooga Convention. One of two things will have to be done to relieve the B. of L. F. of a condition that will be a continual annoyance: The B. of L. F. will have to announce that IT IS NOT an engineers' organization, and that engineers should NOT be connected therewith, or, on the other hand, the B. of L. F. will have to announce that IT IS AN ORGANIZATION OF ENGINEERS AND FIREMEN.

"More than ten years ago the Brotherhood of Railroad Brakemen became an organization of conductors and brakemen. The B. of R. T. has become the largest and wealthiest of all the railway brotherhoods, and yet works in harmony with the O. R. C. What would be the result of a similar experiment by the B. of L. F. time alone will prove. This question is one of great concern. A mistake could be made that we would always regret, and yet WE MIGHT MAKE A MISTAKE TO PERMIT OTHER ORGANIZATIONS TO DISCRIMINATE AGAINST OUR MEMBERS.

"If a railway corporation issues an order which forbids any of its staff to be members of the B. of L. F. we consider a great injustice has been done. WHEN ANOTHER LABOR ORGANIZATION FORBIDS ANY OF ITS MEMBERS TO BE MEMBERS OF THE B. OF L. F. IT IS A GREAT INJUSTICE.

"When war is declared peace should be the thing sought for. How can peace be best obtained? By announcing to the world that the B. of L. F. has no interest, and gives no protection, and assumes no claims on locomotive engineers as members, and that the B. of L. E. is right in prohibiting its members belonging to the B. of L. F., we would bring peace. On the other hand, following in the footsteps of the Brotherhood of Railroad Brakemen would bring peace.

"Whether we will allow events to shape themselves, dodging AN ISSUE THAT SOME DAY MUST BE MET, or whether we will adopt one of the two courses now open to the B. of L. F., is a question for the Chattanooga Convention to decide. . . . .

"Those who have known the Editor for as many as fourteen years will remember how earnestly he fought, through the columns of the Magazine at that time, the proposition to change the Firemen's Brotherhood into an Enginemen's Brotherhood. The writer then believed that it would be disastrous to the firemen's interests to make the change. He will now confess that he thought exactly the same thing about the Brotherhood of Brakemen; he thought that when the B. of R. B. ceased to be the brakemen's organization the brakemen's interests would suffer. The writer also firmly believed that when the Brakemen's Brotherhood became a trainmen's organization a fratricidal war would be waged between the Conductors' Order and the Trainmen's Brotherhood. TIME HAS PROVEN THESE FEARS UNFOUNDED. The brakemen's interests are far better served by a POWERFUL organization which has a DEGREE OF PERMANENCY in its membership instead of a CONSTANTLY CHANGING membership, than they were by the old B. of R. B. Again, the predicted war between the Conductors and Trainmen NEVER TOOK PLACE. Neither has attempted anything against the other so unfraternal as the recent edict of the B. of L. E. (if report is true), that suspends a local division, and expels all of the members of that local division, if it fails to expel all of its members that belong to the Brotherhood of Locomotive Firemen. Think of these things, brothers; these are serious times, times that deserve the best thought of the best minds of our Brotherhood."

Particular attention is called in the foregoing editorial expressions to the prediction made by Bro. Carter that the present controversy at the time he writes constituted "AN ISSUE THAT SOME DAY MUST BE MET." The hostility of the B. of L. E. has become SO PRONOUNCED that the time has finally COME TO MEET THE ISSUE, and let it be known that none of the officers or members of the B. of L. F. upon whom devolves that duty will for one moment try to shirk the responsibility incident to the proper exercise thereof or neglect the performance of same in the most insignificant particular. THE PROTECTIVE MACHINERY OF THE B. OF L. F. WILL OPERATE TO GUARD THE INTERESTS OF ITS MEMBERSHIP JUST AS EFFECTIVELY AND AS STRENUOUSLY WHEN THOSE INTERESTS ARE ASSAILED BY AN INSTITUTION CLAIMING TO BE A LABOR ORGANIZATION AS THOUGH THEY WERE ATTACKED BY ANY OTHER, REGARDLESS OF WHAT ITS NATURE MAY HAPPEN TO BE.

It is rather strange that the B. of L. E. Journal should go clear to England to find an example of what it is pleased to class as a "mixed" organization when we have a sample thereof in the B. of R. T. within the confines of our own continent, and having headquarters in the same city with those of the B. of L. E., but the B. of R. T. would not suit the Journal's purposes of comparison in this case, for while it is an organization composed of trainmen working in different capacities as such, it has been eminently successful under the precise condition which the Journal holds to be ruinous and claims to be responsible for the inefficiency of the enginemen's organization in England. Then comparatively very few men in the United States are familiar with the details relative to the organization of railroad men in the British Isles, anyhow. Now, then, as to the B. of R. T. being a "mixed" organization in the sense the Journal applies the term (embracing in its membership conductors and brakemen), IT HAS, AS BRO. CARTER SAYS, BECOME THE "LARGEST AND WEALTHIEST OF ALL THE RAILWAY BROTHERHOODS," AND YET WORKS IN HARMONY WITH THE ORDER OF RAILWAY CONDUCTORS. By what course of reasoning, therefore, can any person hope to demonstrate that the Brotherhood of Locomotive Firemen, WITH A MEMBERSHIP OF ENGINEERS AND FIREMEN, can not also continue to be a LARGE AND WEALTHY ORGANIZATION, AND INCREASE IN SIZE AND PROSPERITY, AND WORK IN HARMONY WITH ALL OTHER RAILWAY BROTHERHOODS?

Permanency of Membership.

Bro. Carter refers to the fact that the brakemen's interests are far better served by a POWERFUL ORGANIZATION which has a DEGREE OF PERMANENCY IN ITS MEMBERSHIP INSTEAD OF A CONSTANTLY CHANGING MEMBERSHIP SUCH AS THE OLD B. OF R. B. Permanency of membership is an advantage most desirable to all organizations, particularly of such a character as ours. It is an advantage that we could enjoy without interfering in the slightest with the membership of the B. of L. E., but the B. of L. E. is determined to deprive us of that advantage, if within its power to do so, by coercing or trying to coerce those of our members who can be induced to join its ranks to withdraw from our Brotherhood. Now, the question is whether we are to enjoy this advantage or surrender it IN THE INTEREST OF AN INSTITUTION WHICH AS SUCH HAS ALWAYS MAINTAINED A DISPOSITION OF ESTRANGEMENT TOWARDS US AND NEVER EXTENDED OUR BROTHERHOOD EVEN THE COMMONEST FRATERNAL COURTESIES. PERMANENCY OF MEMBERSHIP being the very desirable feature which Bro. Carter says it is, and of which the success and prosperity of the Brotherhood of Railway Trainmen is convincing proof, the Brotherhood of Locomotive Firemen has EVERYTHING TO GAIN AND NOTHING TO LOSE BY ENCOURAGING ITS ESTABLISHMENT WITHIN ITS OWN RANKS, AND IN FACT IT IS A DUTY IT OWES ITSELF TO DO SO.

Expulsion of Bro. Donnelly.

In citing the case of Bro. Donnelly the Journal freely states without the slightest hesitation, apology or other admission or exhibition of shame or guilt, that that brother was ACTUALLY EXPELLED BY DIVISION 251 OF THE B. OF L. E. BECAUSE HE HAD COMMITTED THE APPALLING OFFENSE OF JOINING THE B. OF L. F. YE GODS! THINK OF IT, BROTHERS, EXPELLED, AND HIS INSURANCE FORFEITED. What would be thought of any railroad company on this North American continent that would "expel" a man from its service for joining the B. of L. F. or any other legitimate organization of any kind? Why, even the most rabid, intolerant and fanatical leaders in the Citizens' Alliances and Manufacturers' Associations would hesitate long before openly and wilfully driving a man out of their employ because he had joined some labor organization, and if they should do such a thing they would for obvious reasons endeavor to utilize some false pretext so that the real motive for their action might be hidden from the world. Yet the B. of L. E., through its official organ, publicly acknowledges without the slightest evidence of compunction, that Bro. Donnelly was ACTUALLY "EXPELLED," his insurance, of course, being forfeited and his family deprived of its benefit, because he had exercised the inalienable right of a free-born American citizen, who, being duly qualified for admission to our Order, became a member of same. IN THE FACE OF SUCH AN INCIDENT, WHO CAN SAY THAT THE TIME HAS NOT COME TO MEET THIS ISSUE? The Journal severely criticises Bro. Donnelly for instituting suit against the B. of L. E. to enjoin that Order from expelling him on account of said membership in the B. of L. F. Closely following this criticism the blank upon which an applicant makes his application for membership in the B. of L. E. is set out, and in said blank this statement appears: "I am not a member of any other labor organization, except ————, and I agree, if admitted, that I will withdraw from all other labor organizations within ninety days from the date of my initiation into the B. of L. E.," etc. The Journal puts much stress upon the binding effect of the foregoing language, and it is asked if the officers of the B. of L. F. can commend their own action in putting their legal department at work in an effort to defend such "palpable fraud."

We shall later refer to the language of the application, but whatever construction can be given to the words, they have nothing to do with Bro. Donnelly's case.

What Are the Facts?

Bro. Donnelly never signed any application agreeing to withdraw from a labor organization when he took membership in the B. of L. E. At that time no such requirement existed, so why should the Journal be so loose in its statements as to charge one with doing that which it is pleased to call a "fraud" when it was so clear that the language used could have no possible application to the case under discussion. Bro. Donnelly joined the B. of L. E. about twenty-three years ago, and has held continuous membership in that Order ever since. Insurance policies in the sum of Three Thousand Dollars were issued to him. The language in these policies contains NO RESTRICTION RESPECTING HIS RIGHT TO BELONG TO ANY CHURCH, POLITICAL ORGANIZATION OR OTHER SOCIETY which he might see fit to join. He paid assessments on his insurance amounting TO OVER ONE THOUSAND DOLLARS, and dues into the B. of L. E. amounting to OVER FIVE HUNDRED DOLLARS. Most all of this large sum of money was paid in while the B. of L. E. offered no objections to its members belonging to the Brotherhood of Locomotive Firemen. During all of the time that the B. of L. E. was collecting and using Bro. Donnelly's money for the benefit of the organization, he had a right to believe that the organization would never arrogate to itself the power to regulate his private affairs, or add a condition to his contract of membership, that would deprive him of exercising the right of a free man. And when the Engineers sought to expel him for his refusal to withdraw from the B. of L. F., he sought refuge in the courts to prevent them from depriving him of the insurance which he had provided for himself and family, and the other rights in the B. of L. E. which he had so well earned during twenty-three years of faithful membership.

Such are the facts in Bro. Donnelly's case, so we ask, WHO IS ENDEAVORING TO PERPETRATE A FRAUD? THE B. OF L. E. TAKES OVER $1,500 OF BRO. DONNELLY'S MONEY; AND THEN, BECAUSE HE EXERCISES THE RIGHT OF A FREE MAN, IT SAYS, "WE WILL PUNISH YOU—YOU SHALL BE DEPRIVED OF EVERY RIGHT IN THIS ASSOCIATION, NOTWITHSTANDING THAT YOU HAVE BEEN HELPING TO BUILD IT UP AND STOOD BY IT FOR TWENTY-THREE YEARS, AND NOTWITHSTANDING THAT YOU HAVE PAID ALL THIS LARGE SUM OF MONEY ON YOUR INSURANCE, AND THAT YOU ARE TOO OLD NOW TO GET INSURANCE ELSEWHERE AT A REASONABLE FIGURE, WE WILL CANCEL YOUR INSURANCE POLICIES."

Under barbarous governments, when it was determined that a party committed offense against the governing power, his property was confiscated, but in civilized nations, and especially in our own country, the confiscation of property even on account of the commission of crime has been condemned, and consequently, in the constitution of every State will be found a provision against working any corruption of blood or forfeiture of property of the party committing a violation of law, so the B. of L. E. assumes to do acts against its members that the State itself condemns and shrinks from doing. So again, we ask, who is engaged in the perpetration of fraud, in the commission of oppressive acts, in the working of hardship upon others?

UNDER CONDITIONS SUCH AS THE FOREGOING THE OFFICERS OF THE B. OF L. F. FEEL THAT THEY WOULD CERTAINLY BE DERELICT IN THEIR DUTY SHOULD THEY FAIL TO AID IN DEFENDING OUR MEMBERS AGAINST SUCH PERSECUTIONS VISITED ON THEM BECAUSE THEY ARE B. OF L. F. MEN.

It is a Crime.

A few years ago the B. of L. E. together with other labor organizations besought Congress to enact a measure making it criminal for a railroad company to prevent their employes from belonging tc the Brotherhoods or to compel those who were already members to withdraw therefrom. Such a measure appeared to Congress necessary and proper and so it was passed, consequently it is now a crime for a railroad company to restrain any employee, by threatening to discharge them or by any other means of intimidation or coercion to prevent or try to prevent them from exercising their full right with respect to belonging to any labor organization whatsoever with which they may desire to affiliate themselves. The only reason that railroad companies ever wanted to prevent their employes from joining the B. of L. F. or any other railroad Brotherhood was because they considered it was detrimental to their own (the railroad companies') selfish interests to have them do so. The only reason the B. of L. E. has ever given for expelling certain of its members for insisting on belonging to the B. of L. F. is that it was not conducive to the advancement of its SELFISH INTERESTS that they should be members of our Brotherhood. If this plea does not excuse railroad companies from the commission of such a gross wrong, it certainly does not in any manner deduct from the seriousness of the offense when the same is committed by the B. of L. E., and if the B. of L. E. does not happen to come within the letter of this law, it certainly comes within the spirit of it, and IS MORALLY GUILTY OF ITS VIOLATION, which the United States Congress has declared to be a crime, and every time the B. of L. E. thus discriminates against a B. of L. F. man IT BREAKS THE SAID LAW AND DOES THAT WHICH IT SOUGHT TO MAKE AND DID ASSIST IN MAKING A CRIME. We would ask the B. of L. E. Journal with all candor, can its organization afford to perform daily an act which it importuned Congress to declare a crime? IF IT IS A CRIME FOR AN OFFICIAL OF A RAILROAD COMPANY TO INTERFERE WITH AN EMPLOYE'S MEMBERSHIP IN ONE OF THE BROTHERHOODS EITHER BY THREAT, IN-

TIMIDATION OR COERCION, WHY IS IT NOT EQUALLY REPREHENSIBLE FOR THE B. OF L. E. TO DO LIKEWISE?

B. of L. E. Form of Application.

Now regarding the blank application for membership in the B. of L. E. which is set forth in the Journal's editorial, we must say that the language therein found does not require an applicant to withdraw from the B. of L. F., regardless of the action of that Order in the premises. But on the contrary, a careful reading of it discloses the fact that the applicant agrees to withdraw from all OTHER organizations except the B. of L. F. Here is the language: "I am not a member of any other labor organization except —— (in the blank space it is presumed the applicant will write B. of L. F.). And I agree, if admitted, that I will withdraw from all OTHER LABOR ORGANIZATIONS within ninety days from the date of my admission," etc. Now, it is plain to be seen that the member or applicant agrees to withdraw from all OTHER organizations except the one he names in the blank. So it is clear that every individual signing such an application has the right to rely upon the fact that he will not be required to withdraw from the labor organization the name of which he writes in said blank, as one to which he belongs, only ALL OTHERS—in the requirement of the language.

Now again we ask who is perpetrating a fraud? A member of the B. of L. E. hands a B. of L. F. man this blank and has him fill it out; in many instances assuring him that he will NOT be required to withdraw from the B. of L. F. if he joins the B. of L. E. The blank plainly tells him that he will be required to withdraw from all OTHER labor organizations, except the one he names therein, and then later he is informed that the proper construction of this language is that he MUST WITHDRAW FROM THE ORGANIZATION HE SO SPECIFIES.

Taking Advantage of a Technicality.

Criticism is offered because it is stated in the petition in Bro. Donnelly's case that the Brotherhood of Locomotive Firemen is not a labor organization. The petition stated that the B. of L. F. is licensed in the State of Illinois to do business as a fraternal, beneficial association, and that labor organizations were not required to take out a license; that the organization had paid out over five millions of dollars in insurance since it commenced business, that it is publishing a Magazine chiefly devoted to scientific railroading, the management and running of locomotives, etc., and in these respects it could not be classed exclusively as a labor organization. All these things are true and our contemporary is welcome to indulge in any comment respecting them that may occur to it.

Our general counsel's representation to the court was simply to the effect that the Brotherhood was not exclusively a labor organization. He was representing our Order in its insurance capacity and in order to secure a proper standing in court as a licensed body doing an insurance business it was necessary for him to make certain technical specifications in order to comply with general requirements. It would be ridiculous for any one with a view to misrepresenting the identity of the Brotherhood of Locomotive Firemen as a labor organization to make the statement that it was not such. The first glance at its constitution would demonstrate that it is a labor organization, and if such a representation were sought to be made for the purpose of deception it would be very easy to bring to the court's attention the facts in the case. However, all present recognized the reason why the differentiation was necessary between the Brotherhood's business capacity and industrial capacity, and it is certainly inexpressibly small and pettifogging on the part of the Journal to try to utilize such an incident as a pretext upon which to construct a criticism.

Dual Membership.

Relative to the Journal's repeated statement that the interests of both Orders can be best conserved by each belonging to the organization his work represents and the repetition of its attack on "dual membership" following this statement and its declaration that no man can serve two masters, let us say that the experience of fraternal associations is that the most active and best members are those who belong to a number of societies. On the theory set forth in the article, a man belonging to the B. of L. F. can not be a good member of the B. of L. E. Then on the same theory, he can not be loyal to his employer, and if an employer should take the B. of L. E. at its word and demand that every engineer in his service who is a member thereof shall withdraw from that organization because he can not "serve two masters," could the B. of L. E. consistently blame him? Any fraternal society which arrogates to itself the right to control the actions of members in their private affairs so that such members can not discharge their duty towards their associates and fellowmen in other associations, has grown too tyrannical to be useful, and its sun is setting.

The B. of L. F. is not the master of its members, it does not seek to regulate their private affairs; its aim is to afford opportunity to a member, so that he can all the better discharge the duties he owes to others, but entirely independent of his membership; as for instance, he owes his employer the duty to perform the work entrusted to him in an intelligent and economical manner, and to enable him to do this the B. of L. F. spends thousands of dollars to furnish him information on technical subjects bearing on the class of work which its members perform for their employers. So in every respect it leaves its members free to belong to other organizations without claiming any right to interfere with them in the duties that they should discharge by virtue of their obligation therein, because the B. of L. F. realizes that men owe a duty to their family, which is distinct from the duty that they owe to the State; that they owe the State a duty distinct from that which they owe to their family, or their parents and kindred relations. Yet all of these duties can be fully and faithfully performed by a member without his being justifiably subjected to the accusation that he is "serving two masters" in the sense the Journal wishes to convey. Of course, anv association that has the idea of "master" in its makeup seeks a slavish duty from its members, which is inconsistent with the spirit of our free institutions, and which can only work evil to such an association. The "master" idea can never flourish upon our free soil.

Action of the Cincinnati Convention.

As to the incident on the Erie Railroad in 1886 of which the Journal makes use: Is it not, in view of the fact that engineers are today being hired almost everywhere throughout the continent without the slightest objection or protest from the B. of L. F.; is it not, we say, rather farfetched to refer to an occurrence which transpired when hundreds of our members were in their infancy and which in no possible way has any bearing, direct or indirect, upon the present controversy, and as to the Cincinnati Convention the facts are that the engineers' committee came to that meeting of our grand lodge with a proposition which in its very conception constituted an ultimatum and demanded that that convention bind the Brotherhood to the provisions of that proposition and that when a counter proposition was submitted by the said convention the said B. of L. E. committee declined to consider it and refused to confer further.

The most accomplished diplomats that the world has ever produced could not have offered a more just, reasonable or practicable counter proposition than was submitted by our Cincinnati Convention on that occasion. That counter proposition was that the matter of establishing a basis for the number of engineers to be hired in proportion to the number of firemen promoted should be left to the Joint Protective Boards of the B. of L. F. and Adjustment Committees of the B. of L. E. on each system. Had that convention yielded to the arbitrary demand of the B. of L. E., viz., that one engineer be hired for every fireman promoted throughout the entire continent it would result in some of our firemen on certain systems serving a term as fireman of from 12 to 15 or 18 years, which any fair-minded person can not but fail to recognize as being not only a great hardship, but a gross injustice, particularly in view of the fact that the problem could be solved in a way to obviate such objectionable conditions. The counter proposition of the Cincinnati Convention provided that the matter be left open to such regulation as would permit of the hiring of engineers on roads where promotions were fast, thereby providing for the establishment of such an equitable ratio between the number of engineers hired and firemen promoted as would obviate all such hardships.

Vice Grand Master Maier.

Bro. Maier needs no defense against the attacks of the B. of L. E. Journal. His honesty and sincerity in advocating the best interests of the B. of L. F. is very well known to our members, and as a Grand Officer of our Brotherhood, the statement made relative to the position of all our Grand Officers of course includes him. Far from his actions or expressions being characterized by any spirit of vindictiveness let it be said of him as a Grand Officer that his course in the premises constituted the performance of a duty which it would have been much more agreeable to evade, but there being an issue and the time having come to meet it, personal views, relations, and considerations in the premises were subordinated to the great paramount duty of defending the right of our Brotherhood to protect the industrial interests of all of its members.

Violations of "Honor."

Relative to the Journal's denunciation of the members of the B. of L. E. who having signed the application for membership in that organization are still desirous of holding membership in the B. of L. F. —it has already been shown from a strict interpretation of the wording of the application that the applicant does not bind himself to withdraw from the organization specified therein, but from all "OTHERS" of which he may be a member, and in view of the fact that many of our members are assured by those soliciting their membership that they will not be required to withdraw from the B. of L. F. on becoming members of the B. of L. E. and are afterwards compelled to do so, it is not very difficult to determine by whom the "violations of honor" referred to are committed.

What Constitutes Friendliness?

As to the Journal's concluding remarks containing the astounding assertion that the Brotherhood of Locomotive Engineers is not unfriendly to the Brotherhood of Locomotive Firemen, let us ask what is friendliness and what is unfriendliness?

The B. of L. E. through its members are daily soliciting B. of L. F. men to join their Order, and upon their joining, it compels them to leave our Brotherhood. It allows them to stay in the B. of L. F. for a period of ninety days after initiation into the B. of L. E., which of course, constitutes a "weaning time." It thus permits its own members to all the better exert their influence over the members of the B. of L. F. with a view to having them withdraw therefrom, and it thereby accomplishes an UNFRIENDLY purpose. If some person or association were persuading members of the B. of L. E. to withdraw from its ranks would the B. of L. E. consider such person or association friendly to it? If one neighbor tried to induce the wife of another to leave him, would that be FRIENDLY? If the elder brother, who had started in business for himself, would urge the younger brothers to leave their parental roof and come to him, so that he might have their services, would that be a friendly act towards his parents? Then the B. of L. E. has endeavored to prevent committees of the B. of L. F. from representing its own members. Is this act friendly? When and where did the B. of L. E. get the right to say to other organizations, you shall not represent your members when requested by them to do so?

As before stated, we seek no quarrel with the B. of L. E., BUT WE SHALL NOT SHRINK FROM THE PROPER DEFENSE OF OUR MEMBERS, LET SUCH ACTION LEAD WHERE IT WILL, OR BRING WHATEVER RESULTS IT MAY. It is the course which duty compels us to follow. Let us repeat that we are NOT THE AGGRESSOR, but are simply DEFENDING AGAINST AND REPELLING AN AGGRESSION WHICH THE RANK AND FILE OF OUR MEMBERS HAVE COMPLAINED OF AND PROTESTED AGAINST MOST BITTERLY; and let it be known further that the lawsuits which are now pending or may be hereafter instituted in this connection are not brought by the B. of L. F., but by the aggrieved members themselves, and that all that the B. of L. F. does is to render them such assistance as they are entitled to under the laws of the land. It is certainly the right of any member who is persecuted because he is a B. of L. F. man to seek protection from our Brotherhood and nothing less than a plain duty on the part of the B. of L. F. to afford him that protection to the limit of its recources.

In closing we beg to quote from the preamble of the B. of L. E. It is therein stated, "The true principle of the Brotherhood of man and the fundamental principles of the Order are, 'Do unto others as you would they should do unto you, and so fulfill the law.'"

It is unnecessary to say that the Brotherhood of Locomotive Firemen greatly esteems the Brotherhood of Locomotive Engineers and regrets any controversy that would make their relationship unpleasant, but all it asks of that organization is to live up to the motto in the preamble of its own constitution, and we have no doubt but that perfect harmony and good fellowship will immediately ensue and uninterruptedly continue to prevail.

Back Numbers of the Magazine.

Any member or reader who is in possession of copies of the Magazine for November and December, 1904, and March, 1905, and is willing to dispose of same, will please communicate with John F. McNamee, Editor and Manager, B. of L. F. Magazine, 806-807 Traction Terminal Building, Indianapolis, Ind.

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Death of General Superintendent Storrs.

It is with a sense of the keenest regret that the Magazine announces to its readers the death of Mr. Henry S. Storrs, general superintendent of the Lake Shore and Michigan Southern Railway. It has been but a few weeks since we enjoyed the genuine pleasure of a visit from Mr. Storrs, who, on the occasion of his last trip to Indianapolis, made the Magazine office one of his stopping places. At that time he was in perfect health, and looked the very picture of robust manhood. His appearance then would indicate that he had still before him many years of his usually active and useful existence. But, alas! with what little assurance can we build on the attainment of any end the accomplishment of which depends on the perpetuation of human life.

Mr. Storrs was seized with paralysis resulting from an acute attack of indigestion, and after a short illness died on October 25th last. At first it was thought he was suffering from a slight indisposition, and the papers stated, even on the day preceding that of his death, that in a few days he would be again out and about the performance of his usual duties. He was 56 years old on his last birthday (February 22d). His wife and one daughter constitute the only surviving members of his immediate family.

Mr. Storrs was an ideal railroad official. While always alert to advance the interests of his company, he regarded as no less important the maintenance of such conditions as at all times assured absolute justice and fair treatment to those of its employes serving under his jurisdiction. It mattered not how humble a man's position in the service might be, he could always rest upon the assurance that if he had a grievance he was sure to receive a "square deal" at the hands of Mr. Storrs. In railroad circles Mr. Storrs belonged to the old school, having commenced his career with the C., B. & Q. in 1871 as a brakeman, and remaining with that company in different capacities of successively increasing responsibility for upwards of twenty years. One of his chief characteristics was a blunt, open, honest disposition. His various promotions never occasioned him the loss of one iota of that democratic gruffness which, blended with a kind and truly sympathetic nature, so endeared him to his subordinates. During his recent visit to the Magazine office he evinced as much familiarity with his firemen as though he were one of them, referring to many of them by name, and speaking of their dispositions and characteristics. He stated freely that the Lake Shore had as good a set of Brotherhood firemen as any railroad company could wish for. He spoke in the most commendable terms of the Brotherhood and of the beneficial effects of its influences on its membership generally. He said that he hoped the day would soon come when some successful mechanical device could be put in operation to lighten the physical labors of the locomotive fireman, which at the present time had increased to such proportions, and thereby make it possible for him to devote more time to study, so that he would be all the better equipped to assume the responsibilities of the position for which he is ultimately intended, viz., that of engineer. He said that he hoped the day would soon come when young men employed as locomotive firemen would no longer be required to play the part of stevedores, as at present, but rather, by virtue of lighter duties, and consequent lack of exhaustion, be more capable and more disposed to give their attention to mechanical study than it is under existing conditions possible for them to do.

The death of Mr. Storrs constitutes a great loss to the employes of the Lake Shore, to the company itself, to the railroad world in general, and to the community in which he lived.

The Journal of the Switchmen's Union concludes an aditorial reference to Mr. Storrs' death as follows:

"No class mourns his death more than the switchmen on the Lake Shore, and their hearts go out to his family in their irreparable loss. Let us hope that when we have made our last switch and appear before the Great Superintendent, that the smiling face of Henry S. Storrs will greet us as one of His assistants."

The Magazine tenders its heartfelt condolence and deepest sympathy to his loved ones in their sad bereavement.

A Christmas Greeting.

Before the month passes another Christmas will have come and gone. At its termination a new year will dawn. The season of universal good will will find the world probably better prepared for the perpetuation of peace amongst nations on the occasion of its annual visit in 1905 than it has for several years prior thereto. The internal strife in Russia constitutes about the only exception liable to mar this prospect, and, while it is to be hoped that conditions will justify the early termination of the struggle for freedom from the yoke of bureaucratic and autocratic government in that unfortunate country, it is gratifying to note that it has even already resulted in substantially advancing the cause of human liberty and promoting the great principle of government of, for and by the people governed.

During the past year certain compacts and alliances between great nations of the earth have been entered into, and balances of power thus created which, according to the world's greatest diplomatists, will preclude the possibility of any serious armed conflict for fifty years at least. It is to be hoped that the world will by that time have so advanced in liberality, tolerance, fairness, justice and charity, selfishness have been so far eliminated from the human character, life have come to be regarded as so sacred, and comfort, happiness and freedom from unnecessary sorrow and suffering in others so essential to the mutual well-being of all, that armaments of all kinds and all other instruments of destruction used in killing or injuring mankind will, through the ultimate establishment of arbitration as the exclusively recognized and accepted method for the adjustment of differences, be absolutely eliminated as a part of the equipment of nations, and where preserved at all will exist only as the useless relics of a less enlightened past.

This may be almost too much to hope for in fifty years, but the world has been making great advances in modern times. Education of the masses, now recognized as an indispensable factor in our civic life, is stimulating evolutionary development to a degree that the world in all of its past history has never before witnessed, and the absolute abolition of warfare consequent to such development during the next fifty years, with all its attendant horrors and sufferings, direct and indirect, can not be very well regarded as a much more radical step in the direction of a perfect civilization than achievements accomplished during that same period in the recent past.

That the Christmas of 1905 will find the Brotherhood of Locomotive Firemen a greater, more powerful and more effective agency for the accomplishment of the noble ends it exists to attain than it has ever been before is a fact upon which the Magazine extends warmest congratulations to our entire membership, together with the sincere hope that each and every one of its readers and their loved ones may experience all of the peace and joy which can be summoned up or imagined in those old-time greetings, "A merry Christmas and a happy new year!"

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Ohio State Legislative Board Meeting.

Elsewhere in this issue appears an official announcement from the Chairman and Secretary of the Ohio State Legislative Board of a meeting of the said Board to be held on January 3, 1906. It is to be hoped that every lodge in the State of Ohio will be represented at that gathering. There is much important legislation of which the railroad men of Ohio, as well as of other States, stand badly in need, and owing to modern reform tendency and the practical results being achieved by virtue thereof, it is to be hoped that during the coming session of the Ohio Legislature, the at-all-times reasonable demands of the railroad men of that State for equitable legislation will receive proper consideration.

Steps should be taken to substitute with something in the form of a tangible and fair enactment the network of common law and statutory entanglement known as the fellow servant doctrine, which is always sure to catch the employe or his poor widow and children, no matter how they may seek to escape its operation. It is not the purpose of this reference to go into detail as to the character of legislation most needed, but it is the purpose of the Magazine to impress upon the Ohio lodges the very great importance of sending representatives to the meeting of the legislative board so that the proper interest can be aroused and the necessary steps taken to push the very important work before it. Inasmuch as the insidious influences heretofore operating so successfully in controlling legislative bodies in the advancement of certain special interests seem everywhere to be materially weakening and the plain, simple, American standard of government of, for and by the people is becoming re-established, the conclusion is justifiable that there will be in the future a better opportunity to secure just legislation for the working classes than there has been in the past, and that certain laws already existing and which seem to have been skillfully arranged with other aims in view than that of promoting the ends of justice will in the general assertion of their rights by the people themselves be so adjusted as to insure a "square deal" to all. By taking advantage of the opportunity that is apparently at hand the enactment of much legislation that has been vainly sought for many years past can, we believe, be secured, and it is to be hoped that the said opportunity will be taken full advantage of by the Ohio lodges of our Brotherhood.

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Sparks.

Notwithstanding attention has been frequently called to the fact that anonymous communications can not be published in the Magazine, and a standing notice is carried each month in the Correspondence Department impressing upon our readers and members the necessity for all communications being signed by the name of the writer, such anonymous communications continue to be received at this office. The following quotation is from the notice in question: "If the writer of an article for publication desires that his or her name be withheld, such request will be complied with, but the correct name and address of the writer must be furnished this office as an evidence of good faith, otherwise no attention will be paid to same." At the time of going to press, anonymous communications have been received as follows: Letter headed "From Arkansas," intended for the department known as Echoes from the Firing Line; one signed "H. E. B.," containing questions on Train Rules and Train Practice, and another headed "A Word from a Q. & C. Fireman." These letters the Editor and Manager would be only too glad to publish were they properly signed with the correct names and addresses of the writers, but under the rules they must be withheld. If the writers will kindly furnish this office with the desired information, same will be published in a future issue of the Magazine.

The F. P. Sargent glove, which is manufactured by the Detroit Leather Specialty Company, is shown in a handsome new advertising design in this month's issue of the Magazine. They invite you to "try a pair" the next time you have occasion to purchase a pair of gloves.

News has been received at this office through Bro. Avery C. Moore, an old-time member of Lodge 113, of the death of Bro. Knute Rovelsteadt, who was recently killed in a wreck. His loss is felt very keenly by all the members of 113, for his gentle and sunny disposition won for him the friendship and loyalty of all the members that he, as Master of the Lodge, presided over. Bro. Rovelsteadt was only recently married, and to his bereaved wife we extend our sympathy.

There is nothing that will contribute more to the comfort and happiness of the average railroad man's home than a good washing machine, with which to easily wash the overalls and other clothing that is worn on the engine. A washing machine is offered this month through the advertisement of Sears, Roebuck & Co., and as this is an old and well-established house, it will pay you to investigate their very liberal offer.

Bro. J. H. Sheppard, of Lodge 569, writes that he wishes to thank the members for selecting such officers as have been selected for the ensuing year, especially in the selection of Bro. Ische as Collector. Much praise is due him for the able manner in which he handles this office.

F. J. Drake & Co. are taking half-page space this month to bring to the attention of our readers their new book, entitled, "Modern Locomotive Engineering." This is the latest book out and is modern and up-to-date in every way. Those of our members who are expecting promotion, and those who have recently passed over to the right-hand side, will find this book invaluable to them and well worth the price.

Now, boys, get busy and solicit subscriptions for the Magazine, and you will be surprised to find how easy it will be for you to make a little extra money during leisure hours.

The Illinois Watch Company is represented this month by a new and attractive setting of their advertisements. This is to remind you that they solicit your consideration when in the market for a first-class railroad watch.

Bro. F. A. Hayes, of Lodge 208, writes that their goat had quite a time handling a big, husky fellow at a meeting held November 4th, and says all the boys of his lodge seem to be getting along very nicely, although some of them are not very attentive to lodge meetings.

Have you received one of the Wonder knives we are offering as a premium for two subscriptions? If you have not, would advise you to go after one immediately. It is certainly well worth the time you spend getting the subscriptions. It is a "wonder."

"Forward" is the title of the quarter-page advertisement of the Forward Mining Development Company, which is published in this issue of the Magazine. This company owns large claims in the rich gold-mining regions of Nevada, and are prepared to furnish our readers who are looking for an investment full and detailed information relative to their properties.

The Magazine sells on its merits. Send for sample copies and place them among your friends, and you can be assured that they will do the rest.

Will be pleased to have you send in subscriptions, whether retaining commission or desiring a premium. It is up to you, boys!

The Metal-Elastic Manufacturing Company, of Indianapolis, this month shows new points concerning their patent spring suspender for overalls. This is a very simple device, which can be attached to any make of overalls, and it is one that will add largely to the ease and comfort of the wearer. See that your next suit of overalls, no matter what make they are, is equipped with this patent suspender.

Mrs. H. L. Briggs, whose husband died August 16th, writes to the Magazine and says: "It is with pleasure, pride and praise to the officers and members of Lodge 115 and to the ladies of Oleander Lodge 45, that myself and family extend our heartfelt thanks and appreciation for the kindness shown us in our dark day of sorrow. I heartily thank the B. of L. F. in remitting the insurance left me through the death of my beloved husband."

A full-page advertisement of the Colonial Trust Company, of Pittsburg, Pa., appears this month for the first time in our Magazine. There is nothing that is more conducive to a sense of security and contentment than the consciousness of having laid by for use in case of emergency, or provision against the "rainy day," a sum saved from one's surplus earnings. Railroad men in some cases forget the great importance—yes, necessity—of taking such a step. It would be well to bear in mind that the comparatively insignificant sum of $2.85 per month amounts to an even $1,000 in twenty years, if carefully and safely invested. How advantageous to have such a sum, or even-one-half of that, for the future education of your son or daughter, who perhaps is now a mere babe. What more certain method could you adopt at slight expense than a "sinking fund" of this kind? Answer this advertisement and determine for yourselves as to the advantages of the proposition it submits.

Have you noticed our premium offer? It is a splendid chance for you. By a little hustling you can secure some very durable and handsome premiums.

Our readers are especially directed to the advertisement of Bro. W. Van Name in this issue, in which he offers for sale his sectional models of the Westinghouse quick-action triple valve. Bro. Van Name is a practical locomotive engineer of long experience, and his working models will prove of great benefit in assisting our members in preparing for examinations.

If you already have a knife and a ring, secure others. They will come in handy to give to your friends, and will certainly be acceptable. No matter what lines of business one follows, this knife will prove useful, and a ring bearing the emblem of any order to which one belongs will be appreciated.

The Carson Glove Company has been advertising in the Magazine for a number of months. Their Nonpareil gloves are becoming very popular among our readers, particularly those throughout the Western country, this company being one of our regular Pacific Coast advertisers.

Nothing would be more appropriate than to give your friend one of the beautiful watch charms offered as a premium. Three yearly subscriptions at $1.50 each will place you in possession of one.

Don't fail to read our magnificent offer in advertising department of this number. "CHRISTMAS PRESENTS FOR EVERYBODY" is well worthy of your attention.

The Oshkosh Clothing Manufacturing Company have a good design for the advertisement of their celebrated "J. & C." overalls, which they use in all of the railroad magazines in full-page space. They make a specialty of the requirements of the firemen in the manufacture of their overalls, which in a large measure accounts for the immense success with which they have met.

A B. of L. F. emblem ring is what every good B. of L. F. brother ought to have. By sending in two yearly subscriptions at $1.50 each you can secure one. Any man can feel justly proud in wearing the emblem of such an Order.

Bro. John S. Forbes writes that hereafter the meeting nights of Lodge 516 will be the second and fourth Thursdays in each month, and on the second Friday night in each month a joint meeting will be held with the Ladies Society, Lodge 190. He also states that business on the C. & E. I. is good. The lodge has at least forty applications to be put through before the first of January, and they hope soon to have a schedule in operation that will surprise the Eastern boys. A cordial invitation is extended to any visiting brothers to come in and help hold "Maud" while the boys take a ride over that rough and rugged road.

The Magazine is filled every month with authentic information concerning the locomotive, the air brake, train rules. etc., which the men in engine service find very valuable. Many of these articles may prove of special value to you at some time in the future if you can at that time lay your hand on them. This would be possible if you would have your Magazines for the present year bound up in substantial book form, and the articles properly indexed. The Indianapolis Book Manufacturing Company will do this for you at small cost, and your Magazines for 1905 will then become a valuable book for your mechanical library. The advertisement of the Indianapolis Book Manufacturing Company appears in this issue of the Magazine. Look it up and write them for their prices.

Mrs. Ida M. Piatt and her brothers and sisters wish to express their thanks to the Brotherhood for the payment of the claim of their brother, Homer H. Swartz, who was killed in a wreck at Lewis, Kan., some time ago.

Bro. H. H. Kellogg, Magazine Agent of Lodge 640, writes the Magazine office as follows: "We are still alive down here and are taking in new members quite often. The goat is about 'all in' from the heavy firemen who have been riding him. We are going to give a dance soon, and any of the brothers who happen to be down here on the 21st of November will find that Lodge 640 is there 'with the goods.'"

The Winkley artificial limb is universally recognized as being as perfect a substitute for nature as the art of man can devise. The Winkley Company is one of the most extensive manufacturers of this line in the world, and they have methods for accurately fitting their patients, no matter where they may be located. If you have a friend or acquaintance who has met with misfortune in the loss of a limb, call his attention to the advertisement of the Winkley Artificial Limb Company, which appears on the back cover page of every month's issue of the Magazine. It will be a favor to your friend if you will do so.

Stick pins, lockets, watch charms, rings, hat pins and knives for ladies and gentlemen can be secured through our subscription department. It will not take much of your time, nor necessitate hard labor to secure one or the other of the abovenamed premiums, for the Magazine sells on its merits. Write for sample copies and find out for yourself.

Bro. C. L. Wood, a member of Lodge 16, writes the Magazine office that his lodge is in good condition, ten candidates being initiated at a recent meeting. and that by the end of the year they hope to show a good gain.

The attention of our readers is called to the importance of requesting changes of address before it is too late to take effect with the following month's issue. All changes should reach this office on or before the 18th of the month to take effect with the following issue.

The advertisements in this issue of the Magazine, and in fact those appearing in every issue, are published more for the benefit of our readers than for any other purpose. Many opportunities for keeping up to date with the markets, and for learning of new and important devices for the household would be lost were it not for the fact that we maintain a department in the Magazine for the presentation of these advertisements for the benefit of our readers month after month. These advertisements are "news" in their particular line, just as much so as any other portion of the Magazine, and as such it is to your advantage to read them regularly. When you see something advertised in the Magazine that you need, and find that you can save money by making the purchase through the advertisement, it is certainly to your advantage to answer that advertisement. You can not keep fully posted unless you read the advertisements in the Magazine as carefully as any other portion of it.

Where Brave Men Die.

"Fresno, Cal., October 15. — In a wreck on the Southern Pacific at the south entrance of the railroad yards in this city this morning, Engineer Walter M. Cole and Fireman H. L. Butts met instant death. The bodies of both men were found pinned beneath the engine, the hand of Cole still grasping the throttle." —News Item.

There are broken hearts at many a grave,
There are souls that cringe and cry,
But it seems to me that the angels weep
O'er the spot where brave men die.

"Gone to his death where duty called"
Is the message the wide world hears,
But to me there comes from the silences
A sob and a sound of tears.

None knoweth the ways of powers that wait
Just over the moment's brim,
Yet I am sure no soul goes down
Unwatched or uncared by Him—

By the God who watches in His hidden way,
Who heareth the raven's cry,
Whose great heart thrills with a kindred pain
When a child of this earth must die.

Yes, there are broken hearts at many graves,
There are souls that cringe and cry;
But I know, I know that the angels weep
O'er the spot where brave men die.

Riverside, Cal. G. W. Hendricks.

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Forum

Startling Disclosures By a Canadian Brother.

It has been with no small degree of interest that I have read the different articles which have appeared in the last two issues of the Locomotive Firemen's Magazine relating to the attitude of the B. of L. E. towards the B. of L. F., and feel it to be my duty to let the readers of the Magazine know something of what is going on over here in Canada regarding that question. Ever since I have known anything relating to these organizations they have, up to a short time ago, worked in perfect harmony on every system of road throughout this country, all of the leading roads having had joint agreements, the grievance of one being the grievance of all, which in my opinion is true brotherhood principle, and the only kind of feeling that should prevail between two such orders as the B. of L. F. and the B. of L. E. But here, as in other places, a spirit of jealousy seems to have taken possession of a certain element amongst the membership of the B. of L. E., and has been fostered to such an extent that the kindly relations which so long existed have been seriously interfered with, a fact which I, for one, most sincerely regret, and which I believe is largely due to the teaching and policy of Grand Chief Stone.

There is one feature of the question very consoling to me, and I believe to others as well, viz., that in so far as I know, no member of the B. of L. F. has ever by word or deed done anything toward driving the organizations apart, and that the B. of L. F. will not materially suffer in consequence of the division, because, although we have a great many members who are running engines, WE HAVE NEVER ATTEMPTED TO INTERFERE WITH MATTERS PERTAINING TO THE B. OF L. E. IN MAKING CONTRACTS OR IN OTHER WAYS, ONLY CLAIMING THE RIGHT AS AN ORGANIZATION TO GIVE OUR MEMBERS THAT PROTECTION WHICH IS DUE THEM BY VIRTUE OF THEIR MEMBERSHIP IN OUR BROTHERHOOD, AND THAT RIGHT WE WILL DEFEND TO THE END. We have the greater numbers, in addition to having the younger men; consequently, it must be plain to all that the advantage is on our side. Therefore, the attitude of Grand Chief Stone is the more surprising, and to my mind calls for a question as to his good judgment. I believe that all organized enginemen should at least know just what manner of man Grand Chief Stone is; consequently, I desire to contribute my mite toward that end, since this war is being waged against us by Mr. Stone and his followers in the organization of which he is chief.

IN NOVEMBER, 1903, MR. STONE STATED IN THE PRESENCE OF A NUMBER OF COMMITTEEMEN THAT HIS "POLICY WOULD BE TO FORCE THE TWO ORGANIZATIONS APART," so that his actions are no surprise to those who heard the statement; but the surprising thing is that so many of the members of the B. of L. E. appear to be SO READY TO BLINDLY FOLLOW HIS LEADERSHIP IN THE ACCOMPLISHMENT OF SUCH A SUICIDAL PURPOSE.

All through this country B. of L. E. men are using the argument with our young engineers, when soliciting them to fill out applications for membership, that now they are running engines they have no protection in the B. of L. F., as arrangements have been made by the B. of L. E. with the officials of the different roads providing that they (the officials) will not meet a B. of L. F. committee on an engineer's grievance; therefore, it is necessary for them to join the B. of L. E. in order to have protection. Now, I do not pretend to know whether such an arrangement has been entered into by any railroad officials of this country or not, but I do know that, if such is the case, said agreement is being most commendably disregarded, as its character would justify. I can mention a number of engineers' cases that have recently been successfully handled by B. of L. F. Protective Boards, and I can not name one single instance wherein an official has refused to meet a B. of L. F. committee on an engineer's case. I have found railway officials, as a class, to be gentlemen of honor, and I have reason to believe that, had they entered into any such contract with the B. of L. E., they would at least have made an attempt to live up to it. I am not aware of any such attempt having been made. I am, therefore, forced to the conclusion that there is NO TRUTH IN THE STATEMENT, but have good reasons for believing that an effort has been made by the B. of L. E. to secure such an unfair agreement, and am convinced that railroad officials are too fair-minded to enter into any such compact.

Regarding the protection which they hold out as an inducement to membership, what is it that constitutes the protection that is given by any labor organization to its members? We will have to admit that the strength and ability to bring about and successfully carry on a strike is about the only weapon at the command of labor organizations for use as a last resort in protecting and defending the industrial interests of their members. Take that weapon from them, and they are helpless and practically useless, as far as the maintenance of a fair rate of pay or just conditions of employment is concerned. Again, what was it that first induced many corporations to grant recognition and concessions to union labor? Surely it was not sentiment. True, numerous employing concerns did so through a sense of fairness and justice, but we could mention instances where all such sentiment was conspicuous by its absence, and yet recognition was obtained. In such cases a clear understanding and full knowledge of the strength and condition of organization prevailing amongst that class of employes seeking concessions or the adjustment of grievances, and the consequent fear of the results of a strike, was alone responsible for such recognition and the establishment of fair conditions. Again, in many instances wage-earners have been compelled to resort to a strike in order to secure what was admitted to have been their rights. What, then, in the face of these undisputed facts, is to be said regarding the protection to be had from an organization having for its executive a man who says, as Mr. Stone, in November, 1903, in the presence of a joint committee of engineers and firemen, said to the general manager of the Canadian Pacific Railway, and that, too, at the beginning of negotiations for an increase of pay, that "THERE NEVER WILL BE A STRIKE OF B. OF L. E. MEN WHILE I AM GRAND CHIEF." We were astonished beyond measure to know that such a statement had been made by Mr. Stone, and upon investigation discovered that the spirit of the B. of L. E. constitution was rather in accord with the declaration of such a policy, the establishment of which renders that organization absolutely helpless and useless as a factor in protecting the industrial interests of its membership.

The preamble of the B. of L. E. constitution states that "The true principles of the brotherhood of man are the fundamental principles of the Order, viz., 'Do unto others as you would that they should do unto you,' and so fulfill the law." When we think of the treatment meted out to certain members of our Order recently by B. of L. E. men, and read further on in their constitution, we can not but exclaim, "Consistency, thou art a jewel!" A great many B. of L. E. men have very little respect for their constitution, or else they are most peculiarly constructed. When we hear them deny that theirs is a nonstriking organization we wonder if they intend to adhere to the provisions of that part of their constitution in the same way that they "fulfill the law."

I have been asked to become a member of the B. of L. E., but I will never do so until their constitution is revised in such a way that I can take an obligation to abide by it and maintain my self-respect, and also in a way that will lift the organization out of the useless condition in which I believe it to exist at present. My hope is that all young engineers will take the same stand until the B. of L. E. is either forced out of existence for want of members, or compelled to change its constitution so that men can abide by its provisions and preserve their dignity and self-respect, and enjoy the liberty of free British and American citizenship.

CANADIAN.

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Contentions of the B. of L. E. Journal as Seen by a General Chairman.

I have waited with patience for the appearance of the November issue of the Brotherhood of Locomotive Engineers' Journal. I have it, and have read and re-read it with the hope that by some stretch of the imagination I could see some word, some article, something that could be construed as a denial by Grand Chief Stone, of the B. of L. E., that he said he would do everything in his power to "keep the wheels turning" on the Northern Pacific if the firemen struck. I find none, and I must, therefore, swallow a very bitter pill—very disagreeable to me indeed—and from now on accept the conviction that Mr. Stone had his mind fully made up to place scabs on those engines and order his own men not only to fraternize with those scabs, but to scab themselves, also. He offers absolutely no explanation; therefore must we accept his silence as an admission of his guilt.

I find a great deal of other matter contained in an editorial on page 995 of that Journal, some of it ancient history, but in none of the argument set forth can I find any excuse or explanation for the B. of L. E. acting unfairly by the B. of L. F. on the New York, New Haven and Hartford Railroad, the Great Northern or the Northern Pacific, offered by any member or Grand officer, or by any of the local or general committees of the B. of L. E. Any B. of L. F. man who is misled by the statements appearing in the B. of L. E. Journal for November must indeed be ignorant of his own Order's past history, and any member of the B. of L. E. who swallows that dose must certainly be easily deceived.

The article states first of all that the Journal has no desire to quarrel, and regrets the necessity of using its columns to show "to those that are not of us" what the controversy is all about. Might we ask why they should want to hide this or any other matter in which so many are interested? The B. of L. F. has no scruples whatever in letting the outside world know just where it stands on any question, and is ready and willing to have that big majority outside the B. of L. E. pass judgment on its actions. What the Journal states as necessary to insure peace with the firemen is not correct. He has just got the cart before the horse. If those engineers who comprise that element in the B. of L. E., responsible for the present trouble, could go back to the good old days when they hired and discharged their firemen themselves, and had the firemen cut their wood, black their boots, spade up their garden and do chores around the house for the "missus," as the coon fireman in the South does today, they would no doubt be satisfied. It will be interesting to a great many members to learn that the counter-proposition made by the B. of L. F. convention at Cincinnati in 1902, on the question of fixing a basis for the proportion the number of engineers hired should bear to that of firemen promoted, is what has been in vogue since then, and that the B. of L. E. people are glad to avail themselves of its advantages, although formally and officially declining to acknowledge its acceptance.

I note with interest from the Journal's editorial expressions that the B. of L. E. sought, as far back as 21 years ago, a remedy for the malady from which it appears to be so universally suffering at the present time. They then thought they would effect a cure by depriving B. of L. F. men who were also members of the B. of L. E. of the right to represent their B. of L. E. divisions at B. of L. E. conventions. Then, again, in 1885 they resorted to another remedy, just as some doctors change medicines, and they enacted another provision prescribing an additional test for membership, said clause being as follows: "and is not a member of any other organization at the time of his election," which, of course, meant that a man could not enter the B. of L. E. unless he had first disinfected himself from the contamination of identity with such a vulgar institution as a labor organization. Even this, however, did not have the desired effect, and the malady continued to develop, with the result that at each subsequent convention legislative specialists have been offering sure cures, and the patient has on each occasion unhesitatingly swallowed dose after does. None of them, however, has proved effective, because they have not reached the affected spot, which, by the way, is inaccessible except through the medium of an operation. This affected spot is the problem not so much how to prevent the B. of L. F. engineers from handling complaints of the B. of L. F. runners, but how to force those B. of L. F. runners into the ranks of the B. of L. E. and out of the B. of L. F., and the operation essential to accomplish this end simply consists of attempted secret negotiations with managements of employing companies. It must have been plainly evident to the surgeons in the case that this operation would involve, if striking the vital point of publicity, the unfavorable criticism and condemnation of all fair-minded men, and the most strenuous defensive measures on the part of the B. of L. F., but if it could be successful, all would be well, and to this "if" they pinned their faith and lost. That is why we have entered this fight.

The B. of L. E. Journal can put any face it may desire on this question, but it can not deceive even the members of its own organization, much less the general public, as to the real issue. If the Northern Pacific incident was the first in our memory in which a position of hostility to the principles of organized labor such as that assumed by Grand Chief Stone had been taken, we might excuse same on the grounds of ignorance or from some other cause, but it was not the first. The Engineers' Journal intimates that our Grand officers, in the position they have taken in this fight, are actuated by personal feeling, stating that there is "much of the vindictive" in the editorial expression on the subject appearing in the October issue, entitled, "A Word to the Wise," and that Bro. Hannahan was also actuated by vindictiveness in issuing Official Circular No. 7, referred to therein, and Bro. Maier particularly is criticised on account of certain features of his article, entitled, "The Question of Jurisdiction, or a Victory for the Open Door," also appearing in the October number. Permit me to say, in reply to the said criticism, that I have closely observed the course pursued by our Grand officers in this matter, and consider that they have been, if anything, too tolerant in waiting as long as they did before taking action with a view to instituting defensive measures against the machinations and encroachments of Stone and his followers. I know, furthermore, that those of the rank and file of our membership affected by the course of those gentlemen earnestly advocated the adoption of vigorous defensive measures on the part of our Brotherhood as a protective organization for some considerable time before our Grand officers could see their way clear to comply with their wishes in the matter. As to the editorial expression of our Magazine referred to as being vindictive, let me say that no fair-minded person could regard it as other than a conservative, dignified and manly statement of our position. Now, as to Bro. Maier: From a personal acquaintance with him running through a number of years, both as a Grand officer and a member before he ever held an office in the Order, and having been closely associated with him in committee work, I have never found him other than an honest, earnest and sincere advocate of everything that concerned the interests of our organization, and I defy the B. of L. E. Journal to designate a single act in his official life that does not bear out the truth of this statement. I have never heard Bro. Maier charged with attempting to make side agreements with the managers of any railroads at 2 and 3 a. m., nor with being guilty of a breach of faith in any joint protests made by joint organizations; neither have I ever heard a single Grand officer of any of the other sister organizations speak other than words of praise for him. As to Bro. Hannahan, who is also charged with being actuated by personal feeling in assuming his present attitude in defense of the rights of our Brotherhood, I will ask any member of our organization to go to the delegate that represented his lodge at either the Chattanooga or Buffalo conventions, and ask him what position Bro. Hannahan took when some of our delegates urged that protective measures be taken against the encroachments of the B. of L. E. See if such a question will not elicit from the said delegate a reply to the effect that Grand Master Hannahan opposed every move that was made in that direction, and pleaded for peace as long as it could be maintained honorably. Also, that at Buffalo he held out the hope that, inasmuch as the B. of L. E. had a new man at its head whom he believed would be willing to use his best influence with his organization to put a stop to the constant bickering and nagging to which we had been subjected by it in the past, peace would soon be established on terms that would prove mutually satisfactory, and also that he asked the convention not to take any action, so that the said new Grand Chief could be given every possible chance to show what he was willing to do in the matter.

Whenever the Grand officers of an organization like ours are lacking the necessary ambition to rise to an emergency and take the proper step in a crisis—when they lack vim, energy and manly resentment to the degree of being intimidated when the time arrives for them to assume the proper attitude under circumstances such as those at present existing—then truly might such an organization as well write its epitaph and raise its gravestone while there are enough left to accomplish the task. By way of argument in support of my contention as to what constitutes the real motive of the B. of L. E. in trying to coerce our members to leave our ranks, let me quote from another writer, as follows:

> "All mutual insurance associations depend for their existence upon new material, which must be constantly added if a numerical standard is to be maintained. No insurance association can long live with the same membership. If laws can be so framed as to drive out a majority of the old members, and at the same time bring in new members in like numbers, those who remain will get cheap insurance."

The B. of L. E. is confronted with the necessity of constantly bringing new blood into their organization. This is essential to their future existence, but vanity has so blinded the bureaucracy that rules that order that they fail to see the danger of prescribing conditions .to membership therein which are revolting to every man enjoying the freedom of American or Canadian citizenship.

The young blood of the B. of L. E. must come from the ranks of the Brotherhood of Locomotive Firemen. If there are any members they can get outside of our organization the aggregate number is so infinitesimally small comparatively that it is not worth mentioning or considering. If they have not by this time learned it, they will be soon made aware of the fact that men possessing such citizenship can not be driven like a flock of sheep, and that those enjoying same propose to see their way clearly and to be absolutely certain that that way is not beset by restraining requirements conflicting with their liberties as men before they will follow it in joining any organization, whatever its character may be. The B. of L. E. Journal can enter all the denials it may see fit, but that will avail it nothing in removing the impressions established upon B. of L. F. engineers and firemen alike by the contemptible work of local B. of L. E. committees acting under the guidance of Grand officers of their organization. The Journal states that the B. of L. E. will protect engineers, regardless of whether they are members of that Brotherhood or not. My experience has been that the B. of L. E. extends one kind of protection to its old members, and another kind to its young members, and heaven only knows what kind it would give to the engineer that did not belong.

NOW, MY BROTHERS, THE REMEDY FOR THE EVILS WHICH WE ARE NOW COMBATING LIES IN OUR OWN HANDS, AND IT IS UP TO OURSELVES TO APPLY IT. AS ABOVE STATED, THE B. OF L. E. CAN NOT EXIST WITHOUT RECRUITS FROM OUR RANKS, THE SCORN AND CONTEMPT EVINCED TOWARDS OUR BROTHERHOOD BY THE STONEITE ELEMENT IN THAT ORGANIZATION TO THE CONTRARY NOTWITHSTANDING. LET EVERY B. OF L. F. MAN RESOLVE HIMSELF INTO A COMMITTEE OF ONE AND TAKE INDIVIDUAL ACTION BY DECIDING THAT HE WILL NEVER ENTER THE RANKS OF THE B. OF L. E. WHILE THE CONSTITUTION OF THAT ORGANIZATION CONTAINS THE NARROW, INSULTING, DISCRIMINATING AND INTENTIONALLY OFFENSIVE CLAUSES AGAINST OUR BROTHERHOOD THAT ARE AT PRESENT TO BE FOUND IN IT. One of two results must necessarily ensue: Either the said offensive clauses will be eliminated, or the B. of L. E. itself will ere long so diminish in size that the services of a Lick observatory will be required to locate it or any traces of it, even in our most populous cities. The remedy is simply stated: Stay out of the B. of L. E., and your absence therefrom will do all the rest. No one should be deceived by the expressions of the B. of L. E. Journal relative to Bro. Maier's position in the Northern Pacific controversy. If his presence were objectionable in that fight, then why did they not adjust matters with the B. of L. F. Joint Protective Board long before he arrived? It is evident from Bro. Smith's argument that our boys did everything that manly and fair-minded men could do with a view to an honorable settlement, but they were forced into calling on the Grand Officers, with the result that is already well known to every one interested.

I have made it my business to canvass the situation on my own road, and I find that the rank and file of the B. of L. E. engineers do not by any means approve, much less endorse, Mr. Stone's "wheel-turning" propensities. I have discovered but one engineer who said he would scab in obedience to Stone's orders if the firemen were in trouble, but the rest of them, without exception, have told me that we should not pay any attention to what that gentleman might see fit to say or what orders he would issue of such a character, as they had no weight with any members of the B. of L. E. who knew right from wrong. On systems where the engineers' and firemen's committees work together, regardless of the provisions or the requirements of the Engineers' constitution prohibiting co-operation with the B. of L. F., the best conditions, as a rule, prevail. GENERAL CHAIRMAN.

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Our Engineer Members.

Brothers, my mind has been aroused again with this B. of L. E. subject. I have thought on this a great deal, and have wondered if we could not adopt another degree that would enfold our fireman runners and protect them the same as is done in the B. of L. E. It seems as if the B. of L. E. wants to drag our boys into their organization, whether or no. I think we should adopt another degree, as I said above, and when a member of the B. of L. F. is qualified and passes the required examination to run an engine, after a certain length of time he could be admitted to that degree. I would like to hear from others on this subject.

John H. Moore.

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A B. of L. E. Man's Protest.

I have just finished reading my Locomotive Engineers' Journal for November. I have been a very close reader of both the Engineers' Journal and the B. of L. F. Magazine for nearly twenty years, and am at all times deeply interested in their contents. Permit me to say in reference to the subject lately brought out in discussion in both these publications, that I have no hestitancy in declaring that in my judgment the B. of L. E. Journal is not fair in the attitude which it assumes, as I shall endeavor to make clear. I am at the present time a member in active service and in good standing in my division of the Brotherhood of Locomotive Engineers, having held membership in that Order for a number of years. Being a diligent participant in all movements pertaining to the advancement of the interests of locomotive engineers and of our Brotherhood in general, I know whereof I speak when I say that our brother editor of the Engineers' Journal does not know the real sentiments of *the men in the ranks*—those men who constitute a large majority of the membership of the Brotherhood of Locomotive Engineers. He and our Grand Chief Engineer have been misled into the belief that they understand the minds of all B. of L. E. men by accepting as a sample of our organization those constituting its representation at conventions. But, alas, how mistaken to thus take things for granted and jump at such conclusions. With all honesty and sincerity I do not hesitate to make this assertion, that our B. of L. E. conventions are not truly representative of its membership, but just the opposite. The majority of the delegates at B. of L. E. conventions are made up from the old veteran class of engineers of the early 70's, or, as some of the boys term them, the "Regulars," who secure their election as delegate year after year according to the seniority rule, as being the oldest member of the division or the oldest engineer in service within its jurisdiction. These are the men whose term of apprenticeship as locomotive firemen extended over the extremely long period of from 15 to 20 months, and some were even taken from the machine shops and put to running engines; men who never knew what it was to struggle firing an engine from eight to ten years to earn their promotion; men who early in life were advanced from freight engineer to that of passenger engineer, thus escaping the long hours on duty and the many unpleasant and disagreeable experiences incident to the life of men in freight service in these latter years.

These men, having been in passenger service for a long number of years, it naturally follows that their interest in the men in freight service is at best only half-hearted, absolute indifference for the most part characterizing their consideration of and attitude towards them. They are much inclined to discredit and disregard complaints from the freight engineer, arguing as they do that things were not *thus* and *so* when *they* were running freight. When an engineer is promoted to passenger service he has reached the limit in the line of promotion, unless advanced to some official position, and enjoys all the benefits of the very best of conditions incident to railway service. Then if only *one* engineer in 35 (which statistics prove) ever reaches passenger service, it can be easily understood why in my statement I claim that the conventions of the B. of L. E. are not truly representative of the real spirit of the rank and file of its membership. All railroad men know full well that the great army of engineers in freight, yard, helper and work train service outnumber the passenger engineers 20 to 1—yes, 30 to 1—yet the delegates at our conventions are composed of passenger engineers almost exclusively, the freight engineers being, as delegates, hopelessly in the minority at such gatherings. The enactment of such laws as Sections 27 and 39 in our constitution emanates from that element in the B. of L. E. to which I above refer, and which our journal virtually admits in the November issue was driven out in the open at the San Francisco Convention by the determined effort of the more liberal and progressive element in the B. of L. E., who put up a fight for recognition in legislation and contended for a voice in all matters before the convention, but unfortunately for the young element they permitted their front to be broken. The old "Regulars" rallied their forces, and in the succeeding years were enabled by their strong majority at conventions to quell the young delegate and prevent his raising his voice in protest against this well-organized plan of action to perpetuate the old "regime." To better illustrate and emphasize the truth of this assertion, let me say that Sections 27 and 39 of the B. of L. E. Constitution are in evidence today as part of the fruits of this plan of campaign.

I will direct attention to a statement of the Engineers' Journal (see November issue, page 999), which statement I freely aver is a misrepresentation and can not be substantiated. That statement is that the majority of the delegates at the Firemen's convention in Cincinnati in 1892 was opposed to making any concessions in response to the proposition submitted to that body by the B. of L. E. through a committee of B. of L. E. engineers appointed at the Atlanta convention of the latter organization. If this statement were permitted to go out broadcast over the country unrefuted, with the coloring which the Journal gives it, it would leave wrong impressions in the minds of many and lead them to believe that the B. of L. F. was unreasonable and actuated by exclusively selfish motives, as well as being very short-sighted in looking to their own future welfare. Taken altogether, this would only serve to widen the breach between the B. of L. E. and the B. of L. F., if in reality any such difference as yet exists worthy of the name. I was a delegate to the B. of L. F. convention in Cincinnati in 1892, and I have a very distinct recollection of everything in connection with the case the Journal refers to. Nothing but the best of good feeling existed amongst the assembled delegates in that body towards the B. of L. E. and its members, and to illustrate the truth of this statement let me call attention to the fact that an exceptionally high honor was bestowed upon Mr. Patrick Fennell (Shandy Maguire), who was made by that convention a grand honorary member of the B. of L. F., in recognition of his abilities, and as a token of honor and good feeling given him as a member of the B. of L. E. The ovation which Shandy Maguire received from the firemen at Cincinnati was hearty and sincere, and has doubtless never been surpassed in his experiences, not even at B. of L. E. conventions. I can truly say that at the Cincinnati convention the very best of good will prevailed for the B. of L. E., and there was strongly in evidence on the part of the firemen a disposition towards the establishment of the closest and most harmonious relations with that order.

At this convention (Cincinnati, 1892) a committee from the B. of L. E. appointed at their preceding convention was received and heard. Mr. S. B. Hutchins, of Columbus, O., who was then an engineer on the Big Four Railroad, was, I believe, chairman of this B. of L. E. committee. The proposition which the B. of L. E. submitted to the B. of L. F. was that the promotion of firemen to the position of engineer be regulated on a basis of 50 per cent., i. e., for every fireman promoted one B. of L. E. engineer be hired on all roads, so as to thus find places for the large surplus of engineers floating around over the country. The firemen did not arbitrarily reject this plainly unreasonable proposition, as the B. of L. E. Journal would have us believe, but, after discussing it, did consent to enter into an agreement with the B. of L. E. to the effect that, inasmuch as conditions varied on different systems of railroad relative to the time a fireman had to serve as such before being promoted, that the matter be left entirely to the adjustment committees of the B. of L. E. and Joint Protective Boards of the B. of L. F. on each system for settlement, which was eminently fair.

The editor of the B. of L. E. Journal was a member of that committee, and he is greatly in error regarding the true facts in the case, as a close reading of the proceedings of the B. of L. F. convention of 1892 will easily prove.

The delegates at the Cincinnati convention certainly did everything consistent with good judgment and a proper regard for the protection of the rights and interests of the men they represented, to arrive at a mutual agreement with the representatives of the B. of L. E., but it was very apparent from the attitude of the latter that in this case they wanted the "whole hog or none." I will leave it for the engineers and firemen throughout the country today to judge of the fairness of such a proposition, and what the carrying out of such an agreement would have meant to the firemen.

The editor of the Journal in his article endeavors to make it appear that the B. of L. E. has always been the first to make any advances towards bringing about closer relations between the two organizations, and has always been very magnanimous in offering terms to the firemen. The reader can judge for himself of the fulness of their heart in connection with the Cincinnati incident in 1892. The writer of this article at that convention had then been firing four years, and he continued in that capacity in freight service six years longer before his turn came for promotion. Suppose that the Cincinnati convention had consented to such an agreement as was proposed by the engineers; my term of service as fireman, together with that of the large class promoted on my division when I was, would have been easily extended to eighteen years, while on roads where promotions are fast there is a chance for hiring engineers without working such hardships on the fireman. Ah, but those elderly brothers in conventions never had to serve ten or twelve years to obtain their promotion, or they would probably be more considerate when legislating. Up to 1892 the membership of the B. of L. E. was composed of men who had to fire only two or three years to earn their promotion, and in those days promotion was not by merit alone, but largely by favor, and frequently upon the recommendation of the engineer for whom they fired. Those were the days when the fireman's promotion depended largely upon his holding the good will of his engineer. Firemen then rarely possessed any rights, either for preferred runs or for promotion to the right side, their advancement being often solely dependent upon the pleasure of the engineer, the result being to instill in the minds and hearts of the engineers of that period about the same feeling for the fireman following in their wake as that entertained by engineers on some of our Southern roads today, where they employ the "colored gentleman" as fireman. The effects of such practices have not yet been entirely eliminated, and we of the latter-day class of engineers see it cropping out strongly at times in our division rooms, for it is a bitter pill for the arrogant element to swallow, who, in the zenith of their power, conceded to be "monarchs of all they survey," are compelled to tolerate on the part of others the entertainment of ideas on such matters differing from their own.

Men imbued with such sentiments are naturally BIASED IN THEIR OPINIONS, and it follows that when men of this type are sent as delegates to conventions year after year their course is such as to earn for the organization at large the unpleasant and very undesirable reputation of being narrow and antagonistic to other labor organizations, which name in reality it does not deserve when the disposition of the entire membership is considered. Again I reiterate that the true spirit of the great army of engineers is not represented at the B. of L. E. conventions, for reasons already given. How much better would it have been had the B. of L. E. swallowed some of their dignity and unbended sufficiently to entertain the counter-proposition of the firemen in 1892. Since 1892 the Brotherhood of Locomotive Firemen has grown in strength until that organization now numbers 56,000, and through its good offices it has been the means of correcting many evils and abuses connected with the employment of its members. Not only this, but it has THOROUGHLY DEMONSTRATED ITS ABILITY TO FULLY PROTECT ITS MEMBERSHIP IN EVERY PARTICULAR, until at the present day one can truly say that locomotive firemen, as a class, are working under conditions which, generally speaking, are satisfactory, and where they may happen to be otherwise the Firemen's Brotherhood is well equipped to secure the improvement of such as may happen not to be. All of this speaks well for the Brotherhood and for the courage and manliness of its Grand Officers, as well as for its individual members, possessing as they do the spirit of the men of 1776, who at great self-sacrifice, but with untiring energy, struggled for years to establish their independence, and that the Brotherhood of Locomotive Firemen has succeeded in establishing its independence is beyond question or doubt. I am opposed to any proposition to consolidate the two organizations, because it is my personal judgment that such action would never conduce to the best interests of either; but I do believe that, as the engineers and firemen are so closely associated and drawn so near together by the nature of their employment, if a certain class of engineers would lay aside their dignity and come down off their high pedestal and treat the fireman as their own equal in everything, as one whom they may expect in the course of time to meet in their division room as a brother member of the B. of L. E., why, better things would come from it. THE B. OF L. E., FROM ITS EARLY HISTORY UP TO THESE LAST FEW YEARS, HAS BEEN INFLUENCED

LARGELY BY THE IDEA ON WHICH MONARCHIES ARE BASED, VIZ., THE "DIVINE RIGHT TO RULE."

Promotions have been comparatively numerous in recent years, and firemen of long standing in the Firemen's Brotherhood are becoming the engineers of today. These are, as a rule, men who have been thoroughly schooled on the decks of locomotives—men who have earned their promotion by passing through the fire of bitter experiences, many of them having served through those dark and cloudy times from 1893 to 1898 which tried men's souls and served to prove who were the men of loyal hearts and true to the principles of organized labor. It is of such men as these that the backbone of the B. of L. F. is constituted, and men they are, every inch of them, whenever and wherever you meet them today. Battle-scarred veterans, you may well term them, even though comparatively young in years. They are not the novice of 12 or 15 months' firing experience, strutting around, half-fledged engineers. They are men thoroughly conversant with laws and their usages, who realize fully what Brotherhood organizations stand for, as well as the history and inner workings of such organizations; men who are loyal are deeply devoted to the old "tried and true," and from whose memory can never be effaced the experiences of past trials. Such are these engineers of today, who have TOO MUCH COMMON SENSE TO BE ACTUATED BY ANY FALSE IDEAS OF VANITY BY VIRTUE OF THEIR PROMOTION OR ELIGIBILITY TO WEAR AN "E."

How can any honest man forget those boys—those comrades who stood at his side in the early years of his life—who by united action succeeded after long years of struggle and self-sacrifice in establishing rights for the locomotive fireman? A man who would pass over such things as these lightly must indeed be a base ingrate and contemptible in the extreme. I fail to see any justification for such laws as Sections 27 and 39 in the B. of L. E. constitution. They have the appearance of manufactured sentiment from amongst the Grand Officers, and do not represent that prevailing amongst engineers of today, as a class, but I am fully aware that our journal would attempt to refute this statement by citing the vote of the convention. YES, AND SO LONG AS OUR CONVENTIONS ARE NO MORE REPRESENTATIVE OF OUR ENTIRE MEMBERSHIP THAN WHAT THEY HAVE BEEN IN THE PAST, WHY, OF COURSE, IT IS AN EASY MATTER TO SECURE THE PASSAGE OF SUCH LAWS AS SECTIONS 27 AND 39, OR ALMOST ANY OTHERS THAT THE BOSS-MANIPULATED MACHINE MAY DICTATE. A referendum vote of the B. of L. E. on this question would, I feel, tell a far different story from what the Journal does editorially. One of the maxims which the Brotherhood of Locomotive Engineers often uses is, "Come, let us reason together." It would apply most beautifully in the case under discussion, but deliver us from such reasoning as is responsible for THE EXPULSION OF A MAN FROM THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS BECAUSE HE HAS DARED TO EXERCISE HIS CONSTITUTIONAL RIGHT AS A FREE CITIZEN IN JOINING THE BROTHERHOOD OF LOCOMOTIVE FIREMEN. EQUAL RIGHTS.

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An Interesting Experience.

Having read with much interest the various articles in the October and November issues of our Magazine bearing on the controversy at present prevailing between the Brotherhood of Locomotive Engineers and our own organization relative to the jurisdiction question and other matters, I desire to relate an experience which I have had recently as Chairman of a Local Protective Board in a matter of securing the reinstatement of a B. of L. F. engineer. I wish to say that this experience has convinced me all the more firmly of the justice of the position of the B. of L. F., and, in fact, of the great necessity confronting it to defend its rights against the encroachments of the present rulers of the Brotherhood of Locomotive Engineers.

Permit me to say that I am a locomotive engineer, and have for ten years filled the position I am now holding with my company, the last five of which I have been running passenger.

The experience to which I refer is as follows: A brother of one of our lodges employed on a certain system running through Ohio and Indiana was discharged for reasons which it was apparent to every fair-minded man did not justify his dismissal from the service. He formally submitted his grievance to the lodge having jurisdiction in the case, and I, being chairman of the Local Protective Board, it, of course, became my duty to take his case before the officials.

With this end in view I called upon the general master mechanic. When I stated the reasons for my visit he told me that he would not meet me on an engineer's case, as I was chairman of the B. of L. F. Local Protective Board, and that he would not thus ignore the Engineers' committee. I tried to explain to him that I was an engineer, trying to act on an engineer's case, but he said that I was chairman of the Firemen's committee, and that he would not meet me on an engineer's grievance, but would meet me on any fireman's case.

He further made the assertion that unless the B. of L. E. would absolutely refuse to take the case of this man up, he would not meet a committee from the B. of L. F. in the adjustment thereof, unless compelled to do so by superior authority, but that if the B. of L. E. did refuse to take it up, he would meet any three engineers whom the discharged brother might select for the purpose of presenting his grievance. Upon the general master mechanic thus refusing to treat with me, I immediately called upon the general chairman, who is himself an engineer of several years' standing, and advised him what the general master mechanic had told me, and he said that we would convince him that he was not carrying out the company's policy by refusing to meet a committee of the B. of L. F. on an engineer's case, providing said committee was composed of engineers. I came back to the western terminal and called on the train master, and he set the time to meet our general chairman and myself at the other division terminal, but when we reached his office, as per appointment, he was not there, having been called out of town on some very pressing company business. On his return the next day, however, he met us at his office, and we had a talk with him lasting about two hours. He stated that he could do nothing for us, and said that we did not talk as the B. of L. E. committee did, as we wanted to bring our man out of the trouble without any blame attached to him whatever, while they acknowledged that one of their men involved in the same accident was partially to blame.

As it was useless to argue the case further with the trainmaster, we appealed it to the superintendent, who declared he could not consistently reinstate the brother in whose behalf we were acting, but that if we would go above him and have this man put to work, there would be no ill feeling towards the said brother in the future. He said that our schedule gave us the privilege of taking our grievance to the general superintendent, so we went to the general superintendent, and, after presenting our case fully and discussing it thoroughly with him, he advised us to go back home and wait a couple of days, and then go and see the superintendent again. We did as he advised, with the result that the brother was immediately reinstated. We took occasion, pending the adjustment of his case, to bring to the attention of the officials the case of another brother who had been discharged, and who is a member of both the B. of L. E. and the B. of L. F. This brother pleaded with the B. of L. E. to handle his grievance and to exert their influence to save him his job, but he PLEADED IN VAIN. They turned a DEAF EAR TO HIS APPEAL and decided to do nothing for him. He then, hoping against hope, put his grievance in our hands, on learning that we were meeting on the case of the other engineer who was a member of the B. of L. F. only, and we very gladly represented him before the officials, with the result that they finally DECIDED TO PUT HIM BACK TO WORK WITH HIS SENIORITY RIGHTS UNIMPAIRED.

It is a deplorable fact, and a condition of affairs that I hope our Brotherhood will succeed in remedying, that certain B. of L. E. men during our efforts in behalf of this brother seemed anxious that we should fail in securing his reinstatement. They claimed that the firemen had no right to take up his grievance. Now, judging from the fact that the case of this man, who belonged to both organizations, was TURNED DOWN BY THE B. OF L. E., and the man himself left without any hope of assistance from that source, and that subsequently our board took the case up and HAD HIM PUT BACK TO WORK in his former position as an engineer, it is very plain to be seen that if this man had not been represented by the B. of L. F. there would have been no chance on earth for him to regain his employment, and he would be now, and probably for some time to come, out of work. At least, to get another position he would have been obliged to leave his home town and suffer all the inconveniences and hardships of such a course, amongst them being that of separation from his family.

From the fact that the B. of L. E. would not do anything for this man, a member of their own organization, the conclusion is justifiable that they would do, if possible, less for a B. of L. F. runner, although recently they have benevolently professed a willingness to take up any engineer's case, whether he be a Brotherhood man or not. While the case of the B. of L. F. engineer first referred to, and which we took up with the officials, was pending, the chairman of the B. of L. E. committee visited the superintendent, being with him for nearly two hours, and on leaving his office met a group of B. of L. F. men, to whom he boasted openly, and with whom he offered to bet the sum of $15 that the said B. of L. F. engineer would not be reinstated, which to my notion looked rather suspicious, and certainly sounded very badly. However, it is a source of much real gratification to our boys, and a large number of B. of L. E. men as well, to know that his predictions were not as accurately fulfilled as he would like to have had them.

The brother belonging to both orders whom we succeeded in having reinstated has been running an engine for almost ten years, the last few of which has been on passenger, and he considers that he has EVERYTHING TO GAIN BY PRESERVING HIS MEMBERSHIP IN THE B. OF L. F. and nothing to lose by dropping the B. of L. E., and I don't blame him. LOCAL CHAIRMAN.

* * *

The B. of L. E. vs. the B. of L. F.

I have read with much interest the several articles in regard to the difficulty that has arisen between the B. of L. E. and the B. of L. F., and I think we are in the right, as all that has been said or done by us has been forced upon us, and it is the duty of every true and loyal member of the B. of L. F. to protect their rights as such, and also to see that each one of our members gets a fair and square deal and the protection that he is entitled to. In regard to the declaration of Mr. Stone that he would do all in his power to "keep the wheels turning," I wish to say that the engineers of this country will not stand by him in this case, for the reason that most of the engineers are American citizens and believe in every man having the right to his choice of any organization they see fit to belong to, even if they should deem it proper to withdraw from one to join another. It is my belief that the B. of L. E. is doing itself more harm than good by having such an unfair law as Sections 27 and 39 of their constitution, and I say, if we will stand our ground, they will see that they are duty bound (to themselves) to lay down this weapon, or it will be the cause of their downfall. What I would like to see is this: Let all railroad organizations get together, for in union there is strength. Then it is a fact that each one of us is a small army in ourselves. Any one can see what strength we would have if we all get together and work for one another, instead of having these difficulties arise between us. Do not understand me to say that I wish to affiliate with any of them, but I would like to see the different railroad orders work for and not against each other. J. H. SHEPARD.

Lodge 569, Cape Girardeau, Mo.

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Joint Protective Board, Wabash System.

No doubt there are many of you who are anxious to learn what the Joint Protective Board accomplished while in session in St. Louis. I will endeavor to outline briefly as to what the committee did. First, the local Board from my lodge, composed of Bros. Richardson, Lewis and myself, and Bro. A. G. Keeler, Chairman, of J. M. Raymond Lodge, met with Superintendent Ferrator and Mr. E. O. Shively, R. F. of E. of the Middle Division, for the purpose of adjusting the local grievances, and am glad to say that we were cordially received by those officials. After three days' conference we were able to adjust all our grievances satisfactorily, and am glad to say that the division officials showed a spirit of fairness in their dealings with us. Superintendent Ferrator agreed to put forth every effort to improve the working conditions of the firemen and to relieve them of unnecessary labor. This committee believing that he would fulfill each and every promise which he made, also after the kind and gentlemanly feeling and just treatment accorded us by Mr. Ferrator and Mr. Shively, we left the office satisfied that we had accomplished a great deal of good for the welfare of the firemen employed on the Middle Division.

After Bro. Keeler and myself had finished our business with the division officers we left for St. Louis, arriving there on September 16th, and immediately got

Top Row—W. F. Marshall, 526   Wm. B. Chater, 421   R. Rust, 532   B. L. Miser, 556, Vice Chmn.   A. G. Keeler, 49   A. W. Fitzjohn, 405, Sec. and Treas.

A. Williams, 54   Finis McLean, 54, Chairman   S. G. Lucas, 535

JOINT PROTECTIVE BOARD, WABASH SYSTEM, UNITED STATES AND CANADA

(Bros. Wm. B. Chater, of 421, and Wm. Stockhill, of 5, are members of the Board in Canada. Bro. Stockhill was not present when picture was taken and same could not be secured.)

down to business with the Board in drawing up a wage schedule and a set of working rules for presentation to the management. After several conferences with both General Manager Miller and General Superintendent Cotter we came to a satisfactory settlement under the present conditions that exist on the Wabash System. One thing in addition that we accomplished, and which the firemen can be proud of, is that General Manager Miller recognized the Brotherhood of Locomotive Firemen, gave our General Chairman an annual pass over the entire system and Local Chairmen quarterly passes over their respective divisions. But the GREATEST favor that he did the Brotherhood of Locomotive Firemen was the giving to the Brotherhood on the Wabash the RIGHT TO HANDLE THE GRIEVANCES OF ENGINEERS BELONGING TO OUR ORDER.

I will say, in conclusion, the just and considerate treatment accorded us by General Manager Miller and General Superintendent Cotter should be greatly appreciated by all of us, and I earnestly hope that the firemen throughout the system will put forth every effort within their power to make their management a success.

S. G. Lucas,
Secretary, Lodge 535.

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Recognition of a Worthy Official.

In the ranks of railroad officials, as well as of men of other callings, time inevitably creates vacancies, and the younger men, fresh from subordinate activities, step up to assume the weight of increased responsibilities. Oftentimes in the railroad world, as in other branches of industry, the character and disposition of these men vary. Some are kind and congenial, and combine the qualifications of conserving and advancing the interests of their employers with a capability of maintaining the most friendly and cordial relations with their subordinates, from whose ranks so many of them advance. Others, again, seem to imagine that a sentiment of antagonism towards the rank and file of the employes should constitute an indispensable feature of their capabilities as officials, as well as of their loyalty to the interests of their company. Of the latter class I have nothing further at this time to say, as it is to one of the former I desire to refer. That gentleman is Mr. R. E. McCarthy, who has recently been promoted from the position of superintendent of the Pittsburg Division to that of general superintendent of the Pennsylvania Lines West of Pittsburg, and who, through his vim, energy and determination, coupled with a high standard of merit, has succeeded in advancing himself from the position of telegraph operator to that which he now holds. Mr. McCarthy's career through his various stages of promotion has always been characterized by a kindly consideration for his subordinates, at all times thoroughly compatible with the full performance of his every duty towards his employers.

Feeling that a man of this character deserves not only the good will and admiration of those who work under him, but is entitled, as well, to a practical expression of appreciation and encouragement at their hands, the engineers of the Pittsburg Division appointed a committee to present to him an expression of their esteem and regard in a set of resolutions, as follows:

"Whereas, We learn with a great deal of pride and satisfaction that Mr. R. E. McCarthy, superintendent of the Pittsburg Division of the P., C., C. & St. L. R. R., has been promoted to the responsible position of general superintendent of the Pennsylvania Company's lines West of Pittsburg; and,

"Whereas, We have been closely associated with Mr. McCarthy in the various capacities in which he has served the P., C., C. & St. L. R. R., viz., that of telegraph operator, train dispatcher, trainmaster and division superintendent, covering a period of over 20 years of faithful and meritorious service; and,

"Whereas, We look back with pleasant recollections to all our relations with Mr. McCarthy, and we do most heartily commend and indorse his policy, which has always characterized his every act as an official as one of fairness and impartiality, at all times being just and considerate; therefore, be it

"Resolved, That while we deeply regret his removal from our midst, yet we wish to congratulate him upon his advancement and to assure him that in leaving he carries with him the confidence and respect of every locomotive engineer employed upon this division between Pittsburg and Columbus. Be it further

"Resolved, That we recognize and thoroughly appreciate and commend those sterling qualities possessed by Mr. McCarthy of being ever ready to meet the most humble employe as man to man."

On this occasion were gathered together in his office men who were running engines and actually received orders from him when he served as an operator, amongst them being one in particular whom I desire to specifically mention, and who received a special invitation from the committee to participate in the happy event. This gentleman is Mr. M. J. Purcell, at present filling a responsible position in the Columbus shops, and formerly for twenty years night roundhouse foreman of the Columbus and previously of the Dennison roundhouse. That Mr. Purcell did not himself advance to a still higher position than he at present occupies is attributable to an unfortunate accident with which he met while performing certain duties incident to his early railroad life, and which resulted in the loss of a leg and led to an extremely aggravated case of neuralgia, from which he has for many years suffered at periods the most intense agony, his affliction necessarily rendering impossible that constantly close mental concentration and application to duty so essential to steady advancement in the railroad official world. For many years, however, during which he served as roundhouse foreman, his incumbency of that position was at all times characterized by such a sense of fairness and determination to give every man a square deal as to win for him the lasting good will and warm regard of all with whom the performance of its duties brought him in contact.

Nothing could be more appropriate than the presence of "Mat" Purcell on this occasion, as the personality of this veteran the more strongly reflected the sincerity of that sentiment which we were so gratified to express to General Superintendent McCarthy. A PARTICIPANT.

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An Item from Lodge 14.

Not having heard anything from Lodge 14, I thought that you, Mr. Editor, might think that our lodge and members had lost interest in the welfare of the Order. Not so, for when you have members—and young members, at that—who go into the field and gather in fifteen applications for membership in one month, a lodge is certainly prospering. This was accomplished by Bro. Sinica Bottorff, one of our worthy members of hardly one year's membership. With such good young material in an old lodge there is no room for lack of interest. The officers and members of our lodge feel very kindly towards Bro. Bottorff for his untiring zeal, and hope he will continue in the good work. We also hope it will be the means of goading our members on to even excelling this fine piece of missionary work.

J. A. FARRELL, *Secretary.*

Notice to Ohio Lodges.

Pursuant to the provisions of the Constitution, the Ohio State Legislative Board of the Brotherhood of Locomotive Firemen will convene at Columbus, O., Wednesday, January 3, 1906, with headquarters at the Star Hotel. The place of meeting has not yet been decided upon, but will be embodied in the notices which will in the near future be sent to the several lodges throughout the state. It is to be hoped that each lodge will send a representative. Much good work can be done in the way of securing legislation favorable to railroads employes if a proper interest is shown by those to be affected by such legislation.

A most important duty which confronts the Board is the selection of the right man to represent our Brotherhood before the Legislature during its approaching session. He should be a man tried and true; one who can have no interest in his work at the Legislature but that of advancing the well-being of the men he represents; one who is not susceptible to any influence but that which emanates from the Brotherhood; one who will apply himself to the work assigned him with fidelity, diligence and loyalty, and not delegate that work to others without proper authority and justification for so doing; one who will exert himself at all times with a view to the advancement of the legislative interests of railroad employes and wage-earners in general, and confine his efforts to this field.

We trust that such a man will be selected by the Board at the coming meeting to fill this very important position.

Fraternally yours,

F. P. MCDONALD, *Chairman.*

WM. H. WEISEL, *Secretary.*

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Accident Insurance.

I have read several articles in the Magazine bearing on the subject of accident insurance being adopted for the benefit of Brotherhood firemen. I think the brothers generally would be pleased to see an accident department created. I, for one, would be glad. A very large percentage of the firemen are carrying accident insurance with the different companies, and when one gives the subject a little study he must realize the great advantage it would be to the Brotherhood to have such a department.

The leading newspapers and magazines are daily disclosing some of the operations of the old line life insurance companies. The big salaries that are being paid to the heads of these associations and their subordinates, when one comes to give the subject consideration, leave a substantial ground to doubt if the policy-holder can derive much benefit for the price he has to pay for such insurance. Of course, it is intended that it shall be optional with the members as to whether one carries the accident insurance or not. It will be easy enough to handle the accident claims that come up. For instance, let each claim be governed by the action of the local lodge where such accident occurred, accompanied by a doctor's certificate. By this means all claims will be thoroughly investigated and very little fraud can be practiced by those who are so inclined.

C. L. McCarstle.

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In the Field

Third Vice Grand Master.

The year 1905 is now fast drawing to a close, and it will be only a few weeks until we hear the bells ring out the old and ring in the new. How time does pass away! It seems but yesterday to me when I think back to the New Year's morning in 1884, when I was firing engine No. 87, and she was laboring on White City Hill, tugging away with twelve loads of grain behind her and the cold weather below the zero mark. The night was cold and clear, and the music of the church bells could be heard a long ways off on a night like that. I thought to myself, if I was only at home now and asleep, how happy I would be. The old year could go and the new one come in without any ceremony, as far as I was concerned, but I had to work, and work hard, to keep up steam. Time in its wonderful flight has brought many changes, and here we are today, living in a different age—a strenuous age, as it were—an age when men are seeking to climb the ladder of fame more rapidly than at any time in the world's history. Some men are not particular how they reach the goal so hard striven for—if honestly, all well and good; if not honestly, why, any way to get there is their part in life.

The old world moves on just the same. Years come and go as though all men did "unto others as they wished done unto them." If it were not for the selfishness of mankind there would be no need of organized labor, and I might add right here, if it was not for the selfishness of men, we would not need law of any kind, and our lawmakers would be minus their jobs. Our Brotherhood has been a potent factor in the land for the good of locomotive enginemen, and no one is more cognizant of that fact than I am. Every few days something arises to prove this assertion. We are glad that the Order can do good, and we hope that there will never come a time when it will fail.

Since writing my last letter I had the pleasure of making a trip over the Colorado Springs and Cripple Creek District Railway in company with Bros. Wills and Pack, of the engineers' committee. I can not remember when I enjoyed anything as much as I did that trip. Any one going to Colorado should take a trip over the "Short Line," as it is called. The scenery is beautiful and interesting to look at. On our arrival in Cripple Creek we were taken on board the electric cars and made the trip to Victor over the high line. This is another fine sight to see. Victor and Cripple Creek are in the center of the gold mine properties of Colorado. While there has been taken out of the ground great quantities of gold, there also has been much put into the ground prospecting. This is the part of Colorado where the labor troubles were in 1904. I feel grateful to Bro. Pack for his kindness to me. I shall always remember it, and will assure him that when the opportunity affords me the pleasure I shall be glad to repeat the trip.

Lately my work has been confined mostly to meeting with Joint Protective Boards. I do not have time to visit the lodges any more, so many are the calls for other than lodge work. I met with

J. M. Harrold, 294 J. Coleman, 236 J. Spicer, 675 G. P. Burke, 588 W. H. Meadows, 393

I. C. Clark, 497, Vice Chmn. G. W. Lloyd, 424, Gen'l Chmn. C. A. Wilson, First V. G. M. W. H. Eakin, 294, Sec. and Treas.

JOINT PROTECTIVE BOARD, CHESAPEAKE AND OHIO RAILWAY SYSTEM the M., K. & T. Joint Protective Board while in session in Parsons, also with the Santa Fe Board in Topeka, which is one of our best boards, and we are proud of it. While in Topeka meeting with the Board, Lodge 205 and the Ladies Society of that city gave the members of the board a fine reception. The entertainment features were good, which consisted of singing and recitations. Bros. Thos. Burke, General Chairman, and Thos. Hays, favored us with short talks on the good of the Order. Their remarks were appreciated by all who heard them. The ladies did the act right by placing before the visitors a magnificent spread that was fit to set before a king. How nice it is to meet with each other in this way. It makes life run much smoother and leaves no rough edges.

It became necessary to pay a visit to Lodge 280, Thayer, Mo. This was the first time that I had visited this lodge in a long time. I found matters very much to my liking and have only words of praise for the officers of Lodge 280. Thayer, Mo., is located in the land of the "big red apple," and they are there without doubt, and you can if you wish have them "shown" to you.

I expect to make a trip West in December, and shall endeavor to visit Los Angeles, San Diego, San Luis Obispo, Oakland and San Francisco, Cal., Tonapah, Nev., and Portland, Ore.; organize at Ellensburg, Wash.; visit Spokane, Wash., and on home again. I am of the opinion that it will take me at least thirty days to make this trip. I shall endeavor to catch up with my work if I can, for I am behind now, caused by my long stay in St. Paul, Minn.

I want to say a few words with reference to the report of our settlement of the "jurisdiction" question. I am glad to know that the articles on the "Open Door" were so extensively read. It shows that our members are reading the Magazine and keeping up with the times. I want to say in conclusion that EVERY WORD I WROTE IN REGARD TO THE SETTLEMENT IS TRUE, regardless of what any one might say to the contrary. These quarrels are to be deplored, but I can not see any other way out of the difficulty than to STAND UP FOR WHAT IS RIGHT, regardless of who likes or dislikes it. We are not a "peace at any price" movement, neither are we so aggressive that we can not see the rights of others. Time will prove that we are right, and at no distant day, either.

C. W. MAIER.

Fourth Vice Grand Master.

While in Montreal, meeting with the Grand Trunk Joint Protective Board, I had the privilege, in company with representatives of Lodges 69, 84, 144, 151, 221 and 442, to meet with the members of Lodges 15 and 335, at their regular sessions. From the remarks passed by the members and visiting brothers on Brotherhood matters, together with their experiences of lodge work in different parts of the country, I have every reason to believe that two pleasant and profitable meetings were held that will not be soon forgotten. We all have ideas of our own about unionism and lodge work, but after we hear others speak on the work, then we are in a position to see our mistakes and profit by them in the future. If it were possible to hold more of these union meetings among our members it would have the effect of strengthening our organization by establishing a better and more progressive feeling among the different members of our respective lodges.

Lodge 15 has started out on a new era of prosperity, and from the reports of the different officers they are in a better position than they have been for some time. One thing they have not forgotten is their old style of initiating candidates. If any person doubts it, let them give it a fair trial.

When visiting Lodge 335 we found that through changing dates of meeting and putting new blood to the front in responsible positions, they are now holding good meetings, and all business is being carried out and conducted in a businesslike way. May their efforts be rewarded and appreciated.

On going to Ottawa I had the pleasure of being present at the regular meeting of Lodge 172, and was surprised to see such a good representation at this busy season of the year. As this lodge has a very efficient set of officers, who insist on business being carried out according to the laws laid down in our constitution, the future prosperity of this lodge is a foregone conclusion.

To show their appreciation of the Canadian Union Meeting going to their city, they have already selected their committee, and have been promised some very substantial assistance. It is their intention to give the boys the best outing of the season.

While in Ottawa I gladly accepted the hospitality of Bro. Eldridge and his respected wife. Being the Treasurer of Lodge 81, Bro. Eldridge insisted on my looking over his books, which I found a very easy task, as they are models for many other Treasurers to profit by, and showed a good balance in favor of his lodge.

AS THE ENGINEER REPRESENTATION OF OUR MEMBERS SEEMS TO BE A LIVE QUESTION AT THIS TIME, I may be permitted to briefly explain our position on the Grand Trunk System, and the conditions that confronted our Joint Protective Board when endeavoring to secure a new schedule to take the place of the one which expired October 1st last. For several years—in fact, long before the present management came into office—THE B. OF L. E. AND THE B. OF L. F. HAVE WORKED JOINTLY for the purpose of adjusting their general grievances and securing new schedules. This seemed to be SATISFACTORY TO THE MEN, AND ALSO TO THE OFFICIALS, as a good feeling existed between all parties interested. As the three-year agreement ended on October 1st, the officers of the company summoned the joint committees to meet on September 27th for the purpose of arranging a new schedule to take the place of the old one. While our Board responded and were willing to meet the officials with or without the B. of L. E. committee, yet THE B. OF L. E. COMMITTEE POSITIVELY REFUSED TO MEET THE OFFICERS OF THE COMPANY IN OUR PRESENCE, unless our members would withdraw every engineer from that Board. This they would not do, for by complying with that request it would have removed every experienced representative from the meeting.

On the other hand, the company seemed inclined to the view that, as they were the third party in that agreement, and HAD NOT PREVIOUSLY BEEN OFFICIALLY NOTIFIED OF ANY ALTERATIONS BY THE B. OF L. E., THE OLD SYSTEM OF MEETING TOGETHER SHOULD PREVAIL, and it was not until after full explanations of the facts and due consideration given that the company's officials agreed to meet the two committees separately. It seems very peculiar that after the GOOD FRIENDSHIP THAT HAS EXISTED FOR SUCH A LENGTH OF TIME BETWEEN THESE TWO ORGANIZATIONS ON THIS ROAD, IT SHOULD BE SEVERED ON ACCOUNT OF STRINGENT LAWS, AT A TIME WHEN SUCH IMPORTANT SUBJECTS ARE UNDER CONSIDERATION, the result of which means very much to the members of both Orders. Time and experience will decide whether this is a movement in the right direction or a relic of ancient history.

E. A. BALL.

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Official

Addresses Wanted.

Persons requiring the address or any information concerning another will please communicate with the Secretary of the lodge located nearest the residence of the person making such request. Upon receipt of a communication from the Secretary of such lodge requesting that a notice be published in the Magazine inquiring for such address or other information, same will be complied with. However, the Magazine can not undertake the office of a collecting agency and must decline to lend itself to such purpose. The following requests have reached this office since the last issue. Information should be sent to the persons specified in the notice:

Charlie Owens.—A member of Lodge 364, B. of L. F., Memphis, Tenn. When last heard of was in Kern, Cal. His relatives are very desirous of locating him. His description is as follows: Black hair, black eyes, tall and a little stoop-shouldered, weight about 160 pounds; also a little demented. Any information concerning him will be thankfully received by Thomas J. Noonan, Secretary Lodge 364, B. of L. F., 186 Maple street, Memphis, Tenn.

Wallace Whetstone.—A locomotive fireman. His mother is very anxious to locate him, and any information concerning his whereabouts will be appreciated. Address all communications to Mrs. S. A. Whetstone, 708 B. Guerrero street, San Francisco, Cal.

George Regency.—When last heard of was employed as switchman on the Rio Grande Railway at Pueblo, Col. Any information concerning his whereabouts will be thankfully received by M. Scollon, member of Lodge 67, B. of L. F., 271 Farley avenue, Toronto, Ont.

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Lost Traveling Cards, Etc.

This office has been notified of the loss of the following traveling cards, receipts, etc., and the request is made that all members be on the lookout for them. Should they be discovered in the possession of persons not entitled to them they should be retained and forwarded to the owner or to the Secretary of the Lodge which issued same:

Traveling card No. 9774 and receipt for the quarter ending December 31, 1905, issued on October 1st, belonging to T. L. Hutton, member of Lodge 532, B. of L. F., was lost at Grand Rapids, Mich., on November 9, 1905. If found please return to W. F. Rutherford, Secretary Lodge 532, B. of L. F., Box 118, Woodmere, Mich.

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Acknowledgments.

The following persons desire to acknowledge receipts of payment of claims and to express their gratitude to the Brotherhood of Locomotive Firemen, as an organization, and to the individual members, for kindness and courtesies extended:

Mrs. Ida M. Piatt, brothers and sisters, New Lebanon, O.

Mrs. H. L. Briggs, Galveston, Tex.

Fred Cameron Tillson, Oakland, Me.

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Balls and Entertainments.

Courteous invitations have been received at this office to attend the following balls and entertainments. The Grand Lodge force returns thanks and wishes all an enjoyable and successful time.

Lodge 123.—Twenty-third annual ball, at Creighton Hall, Omaha, Neb., Wednesday evening, November 29, 1905.

Lodge 481.—Grand annual ball, at Turner Hall, North street, St. Louis, Mo., Tuesday evening, November 14, 1905.

Lodge 331.—Second grand reception and ball, at Auburn Hall, Chicago, Ill., Thanksgiving eve, Wednesday, November 29, 1905.

Lodge 411.—Fifth annual ball, at Quin Hall, McComb City, Miss., Thursday night, November 16, 1905.

Lodge 266.—Eighteenth annual Thanksgiving ball, at the Kaukauna Opera House, Kaukauna, Wis., Wednesday evening, November 29, 1905.

Lodge 237.—Twentieth annual ball, at Illinois Hall, Chicago, Ill., Friday evening, December 15, 1905.

The Home Account.

The following donations were received at the Home for Aged and Disabled Railway Employes for the month of October, 1905:

B. of L. F. Lodges, 50, $12; 75, $2.36; 86, $3; 127, $25; 212, $5; 379, $6; 474, $5; 486, $5; 528, $5; 539, $10. Total.	$78 36
L. S. to B. of L. F. Lodges, 46, $3; 47, $2.50; 69, $2; 91, $3; 98, $5; 105, $2; 107, $5; 108, $1; 110, $2; 118, $5; 135, $2.50; 140, $5; 164, $5; 168, $5; 180, $5. Total	53 00
O. R. C. Divisions	35 31
B. of R. T. Lodges	210 60
B. of L. E. Divisions	176 95
L. A. C. Divisions	78 00
L. A. T. Lodges	113 65
G. I. A. Divisions	158 25
James Costello, Division 270, O. R. C.	1 00
Members Division 554, B. of L. E.	6 00
R. A. Dreisner, Division 46, O. R. C.	2 00
James W. Davey,. Lodge 313, B. of R. T.	1 50
James Moreland, Division 1, O. R. C.	1 00
Union Meeting held in Chicago, September 29, by Lodge 191 (flower fund)	9 05
J. O. Johnson, Rollo, Mo., through W. K. Bell, Lodge 513, B. of R. T.	5 00
Wm. Roadcup, Division 397, O. R. C.	5 00
J. R. Carr, Division 397, O. R. C.	5 00
W. S. Mead, Division 397, O. R. C.	$5 00
W. R. Watts, Division 397, O. R. C.	1 00
C. J. Lamberton, Division 397, O. R. C.	1 00
Geo. E. Thomason, Division 397, O. R. C.	1 00
James Gibson, Division 397, O. R. C.	50
J. S. Baird, Division 397, O. R. C.	50
P. A. Lynch, Lodge 75, B. of L. F.	3 82
Geo. W. Axe, Lodge 75, B. of L. F.	3 82
From Elmira, N. Y. (unknown).	2 00
From Baltimore, Md. (unknown)	3 00
C. A. Ford, Division 404, B. of L. E.	1 00
Grand total	$962 31

Miscellaneous.—One box of household supplies from Lodge 328, L. A. T.; 2 boxes of canned fruit, Division 49, L. A. C.; 1 quilt from Division 193, G. I. A.; 1 box of household supplies, Lodge 223, L. A. T.; 6 comforts from Division 135, G. I. A.; 6 comforts from Lodge 182, L. A. C.; 1 box canned fruit from Toledo, O.; 1 box of canned fruit from Division 25, L. A. C.: 1 box of canned fruit from Division 60, L. A. C.; 1 box of canned goods (sender unknown); 1 quilt from Division 174, L. A. C.; box of tobacco tags from Division 81, O. R. C.; Lodge 25, B. of R. T.; Division 665, B. of L. E., and Lodge 669, B. of L. F.

Respectfully submitted,

John O'Keefe,
Sec. and Treas., R. R. M. H.

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Beneficiary Statement

Office of Grand Secretary and Treasurer,
Peoria, Ill., November 1, 1905.

To Subordinate Lodges:

The following is a statement of receipts in the Beneficiary Department for the month of October, 1905:

RECEIPTS.

Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.	Lodge No.	Amount.
1	468 75	70	179 25	139	345 75	208	92 25	277	110 25	346	29 25	415	117 00	484	150 75	553	195 75	622	165 00
2	48 00	71	279 75	140	397 50	209	199 50	278	29 25	347	99 75	416	210 00	485	840 00	554	85 50	623	111 00
3	864 75	72	347 25	141	474 00	210	58 50	279	......	348	120 00	417	78 75	486	112 50	555	85 50	624	90 00
4	243 75	73	339 75	142	280 50	211	268 50	280	120 75	349	306 75	418	234 75	487	......	556	......	625	57 75
5	286 50	74	154 50	143	312 00	212	136 50	281	192 00	350	117 75	419	117 00	488	71 25	557	224 25	626	172 50
6	352 50	75	436 50	144	30 00	213	184 50	282	33 75	351	33 00	420	86 25	489	150 75	558	149 25	627	60 00
7	162 00	76	34 50	145	147 75	214	346 50	283	120 75	352	......	421	75 00	490	180 00	559	78 75	628	......
8	501 25	77	376 50	146	322 50	215	340 50	284	618 00	353	114 00	422	89 25	491	75 00	560	84 75	629	33 75
9	322 50	78	142 50	147	159 75	216	144 75	285	392 25	354	......	423	63 00	492	236 25	561	120 75	630	95 25
10	798 00	79	78 00	148	......	217	202 50	286	123 75	355	172 50	424	114 00	493	51 75	562	276 75	631	87 75
11	250 50	80	166 50	149	515 25	218	221 25	287	869 25	356	212 25	425	78 00	494	123 00	563	181 50	632	44 25
12	327 75	81	119 25	150	270 75	219	191 25	288	93 00	357	72 75	426	366 75	495	78 75	564	168 00	633	100 50
13	281 25	82	241 50	151	110 25	220	531 00	289	138 00	358	111 00	427	84 75	496	91 50	565	44 25	634	147 00
14	387 00	83	222 75	152	239 25	221	......	290	127 50	359	76 50	428	80 25	497	120 75	566	142 50	635	117 75
15	102 75	84	129 75	153	142 50	222	149 25	291	104 25	360	106 50	429	191 25	498	107 25	567	87 75	636	48 00
16	419 25	85	231 75	154	129 75	223	207 00	292	37 50	361	119 25	430	......	499	48 75	568	141 75	637	......
17	165 00	86	240 00	155	66 00	224	83 25	293	94 50	362	......	431	72 00	500	79 50	569	123 75	638	69 75
18	180 75	87	171 75	156	214 50	225	67 50	294	171 75	363	402 00	432	195 75	501	147 00	570	61 50	639	52 50
19	210 75	88	145 50	157	75 00	226	274 50	295	237 75	364	101 25	433	63 75	502	219 00	571	......	640	57 00
20	52 50	89	......	158	110 25	227	68 25	296	257 25	365	55 50	434	174 00	503	144 00	572	57 75	641	104 25
21	240 75	90	......	159	186 75	228	413 25	297	222 75	366	85 50	435	128 25	504	44 25	573	150 00	642	93 75
22	99 00	91	258 00	160	180 75	229	288 00	298	144 00	367	108 00	436	237 75	505	63 00	574	135 75	643	25 50
23	111 75	92	139 50	161	44 25	230	549 75	299	147 00	368	114 75	437	35 25	506	129 00	575	64 50	644	51 00
24	297 00	93	105 75	162	467 25	231	......	300	143 25	369	150 75	438	130 50	507	125 25	576	135 00	645	......
25	287 25	94	375 75	163	145 50	232	238 50	301	87 75	370	34 50	439	100 50	508	231 00	577	97 50	646	212 25
26	215 25	95	45 75	164	93 75	233	202 50	302	330 00	371	162 75	440	177 75	509	78 00	578	120 75	647	78 75
27	257 25	96	213 75	165	69 00	234	156 00	303	130 50	372	115 50	441	110 25	510	177 75	579	77 25	648	35 25
28	165 75	97	269 25	166	......	235	213 75	304	211 50	373	155 25	442	102 75	511	207 00	580	......	649	30 00
29	97 50	98	222 75	167	127 50	236	461 25	305	82 50	374	237 75	443	118 50	512	87 00	581	21 00	650	34 50
30	......	99	544 50	168	180 75	237	375 75	306	264 75	375	152 25	444	267 00	513	131 25	582	80 25	651	84 00
31	120 75	100	95 25	169	346 50	238	288 75	307	180 00	376	69 75	445	136 50	514	98 25	583	57 00	652	73 50
32	156 75	101	277 50	170	136 50	239	42 75	308	77 25	377	165 00	446	226 50	515	136 50	584	96 00	653	117 00
33	132 00	102	121 50	171	114 00	240	336 00	309	453 75	378	569 25	447	72 00	516	156 00	585	116 25	654	44 25
34	186 00	103	165 00	172	52 50	241	273 75	310	212 25	379	307 50	448	645 75	517	......	586	77 25	655	53 25
35	137 25	104	162 75	173	260 25	242	257 25	311	92 25	380	49 50	449	294 00	518	44 25	587	143 25	656	90 75
36	123 75	105	101 25	174	604 50	243	105 00	312	185 25	381	247 50	450	259 50	519	145 50	588	54 75	657	75 00
37	171 75	106	52 50	175	406 50	244	168 00	313	117 75	382	126 75	451	137 25	520	49 50	589	58 50	658	86 25
38	......	107	221 25	176	162 75	245	105 75	314	177 00	383	137 25	452	77 25	521	124 50	590	197 25	659	78 00
39	137 25	108	160 50	177	151 50	246	199 50	315	160 50	384	158 25	453	49 50	522	174 75	591	171 75	660	70 50
40	295 50	109	218 25	178	196 50	247	322 50	316	228 75	385	95 25	454	165 00	523	99 00	592	94 50	661	39 00
41	39 00	110	117 00	179	114 75	248	262 50	317	81 00	386	47 25	455	197 25	524	33 00	593	......	662	48 75
42	39 75	111	182 25	180	11 25	249	188 25	318	339 00	387	74 25	456	126 00	525	114 00	594	132 75	663	118 50
43	192 00	112	51 00	181	49 50	250	166 50	319	132 75	388	191 25	457	148 50	526	35 25	595	52 50	664	57 75
44	281 25	113	161 25	182	418 50	251	315 75	320	63 00	389	121 50	458	57 00	527	131 25	596	130 50	665	81 75
45	538 50	114	69 00	183	189 00	252	333 00	321	88 50	390	162 00	459	60 00	528	150 00	597	114 75	666	......
46	67 50	115	76 50	184	85 50	253	222 00	322	54 75	391	183 00	460	98 25	529	156 00	598	84 75	667	42 75
47	179 25	116	......	185	83 25	254	112 50	323	62 25	392	165 00	461	115 50	530	87 00	599	60 00	668	92 25
48	373 50	117	114 75	186	......	255	74 25	324	97 50	393	195 00	462	169 50	531	95 25	600	119 25	669	85 50
49	195 75	118	59 25	187	117 00	256	79 50	325	......	394	20 25	463	180 75	532	90 00	601	162 00	670	144 75
50	77 25	119	99 75	188	382 50	257	87 75	326	184 50	395	107 25	464	129 75	533	102 00	602	156 00	671	66 00
51	151 50	120	192 00	189	234 00	258	39 00	327	297 00	396	182 25	465	189 00	534	402 00	603	70 50	672	77 25
52	297 75	121	280 50	190	25 50	259	169 50	328	124 50	397	70 50	466	204 75	535	147 75	604	34 50	673	575 25
53	110 25	122	61 50	191	238 50	260	375 00	329	......	398	90 25	467	105 00	536	......	605	156 00	674	......
54	309 00	123	225 00	192	351 75	261	57 75	330	273 75	399	126 00	468	30 75	537	65 25	606	41 25	675	60 00
55	60 75	124	161 25	193	65 25	262	243 75	331	117 00	400	222 75	469	112 50	538	152 25	607	72 75	676	21 75
56	169 75	125	56 25	194	391 50	263	150 75	332	120 00	401	247 50	470	180 75	539	144 75	608	113 25	677	50 25
57	523 50	126	123 75	195	108 00	264	70 50	333	279 75	402	114 75	471	40 50	540	......	609	62 25	678	67 50
58	213 75	127	219 00	196	71 25	265	432 75	334	......	403	54 75	472	323 25	541	128 25	610	64 25	679	......
59	434 25	128	97 50	197	82 50	266	231 75	335	38 25	404	84 75	473	......	542	172 50	611	63 75	680	58 50
60	340 50	129	278 25	198	365 25	267	119 25	336	90 75	405	219 75	474	81 75	543	228 75	612	67 50	681	117 00
61	144 00	130	394 50	199	147 75	268	55 50	337	292 50	406	50 25	475	102 75	544	138 75	613	39 00	682	27 75
62	123 75	131	41 25	200	79 50	269	150 00	338	143 25	407	220 50	476	71 25	545	84 75	614	232 50	683	......
63	171 00	132	130 50	201	303 00	270	183 00	339	69 00	408	180 00	477	......	546	46 50	615	105 75	684	......
64	249 00	133	286 50	202	213 75	271	111 75	340	120 00	409	184 50	478	154 50	547	57 00	616	49 50	685	......
65	174 75	134	120 75	203	195 75	272	67 75	341	191 25	410	164 25	479	81 75	548	75 00	617	83 25	686	......
66	132 75	135	166 50	204	192 75	273	194 25	342	195 75	411	214 50	480	33 75	549	114 00	618	81 00	687	......
67	169 50	136	163 50	205	......	274	113 25	343	28 50	412	145 50	481	210 75	550	56 25	619	96 00	688	......
68	110 25	137	......	206	54 00	275	211 50	344	102 00	413	60 75	482	138 75	551	......	620	87 00	689	......
69	76 50	138	340 50	207	258 75	276	202 50	345	153 75	414	143 25	483	58 50	552	......	621	55 50	690	......

Received during month of October $104,562.75

Disbursed during month of October, account Beneficiary Claims ....

3....	$3,000	$9,000
2....	2,000	4,000
38....	1,500	57,000
4....	1,000	4,000
1....	750	750
3....	500	1,500

$76,250.00

Respectfully submitted,
W. S. CARTER, G. S. and T.

Statement of Death and Disability Claims

Paid by the Grand Secretary and Treasurer, from September 30, 1905, to October 31, 1905.

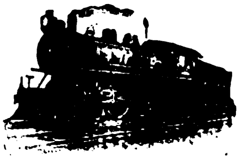
Claim No.	NAMES.	Lodge No.	Death or Disability.	Date.	Cause.	Am't. of Ins.	When Paid
1140	Leonard W. Smith	80	Death	May 10, 1905	Fractured skull	$1,500	Oct. 2, 1905
1105	Edward T. Dowden	474	Disability	Sep. 18, “	Paralysis	1,500	“ 13, “
1060	Jeremiah Donovan	146	Death	May 7, “	Derailing of engine	1,000	“ 13, “
1189	John Quigley	11	“	Aug. 5, “	Inflammation of bowels	750	“ 17, “
1187	George H. Booth	588	“	“ 13, “	Typhoid fever	1,500	“ 17, “
1188	William S. Watson	660	“	“ 7, “	Asthma	1,000	“ 17, “
1190	F. O. Stinson	372	Disability	Sep. 14, “	Locomotor ataxia	3,000	“ 17, “
1191	Michael J. Kingston	304	Death	Aug. 12, “	Derailing of engine	1,500	“ 17, “
1192	Fred Williams	304	“	“ 9, “	Collision	1,500	“ 17, “
1194	Dennis Leahey	533	“	“ 10, “	Drowning	1,500	“ 17, “
1195	James W. Swain	622	“	“ 14, “	Inflammation of bladder	1,500	“ 17, “
1196	Robert F. Featherly	463	“	July 8, “	Run over by cars	1,500	“ 17, “
1197	Charles C. Standart	389	“	Aug. 14, “	Nephritis	1,500	“ 17, “
1198	John A. Kennedy	597	“	“ 20, “	Derailing of engine	1,000	“ 17, “
1199	George H. Devers	489	“	“ 12, “	Collision	1,000	“ 17, “
1200	Charles D. Schreck	275	“	“ 19, “	Collision	1,500	“ 17, “
1201	H. L. Briggs	115	“	“ 16, “	Heart disease	1,500	“ 17, “
1202	Fred Pence	380	Disability	“ 10, “	Amputation left hand	1,500	“ 17, “
1203	Jacob M. Miller	673	Death	“ 23, “	Struck by moving train	1,500	“ 17, “
1204	John A. Baker	371	“	“ 6, “	Paralysis of heart	1,500	“ 17, “
1205	Ralph R. Moore	489	Disability	July 25, “	Amputation right foot	1,500	“ 17, “
1206	Edgar C. Rowles	96	Death	Aug. 13, “	Struck by passing train	1,500	“ 17, “
1207	William A. Sullivan	642	“	“ 12, “	Derailing of engine	1,500	“ 17, “
1208	George Mudd	21	“	“ 24, “	Suicide	1,500	“ 17, “
1209	Homer H. Swartz	527	“	“ 13, “	Collision	1,500	“ 17, “
1210	George W. Healey	363	Disability	“ 14, “	Amputation left arm	3,000	“ 17, “
1211	John G. Seeman	434	Death	“ 13, “	Typhoid fever	1,500	“ 17, “
1212	Alonzo Merrick	251	“	“ 22, “	Cancer of the bowels	1,500	“ 17, “
1214	William Watkins	448	“	“ 10, “	Derailing of engine	1,500	“ 17, “
1215	John Eggiman	141	“	“ 15, “	Derailing of engine	1,500	“ 17, “
1216	Wm. A. Fitzgerald	10	“	“ 22, “	Gall stone	1,500	“ 17, “
1217	Samuel Way	98	“	“ 22, “	Appendicitis	2,000	“ 17, “
1218	Cloyd T. Miller	451	“	“ 29, “	Typhoid fever	500	“ 17, “
1219	Cicero H. Hoover	626	“	“ 21, “	Derailing of engine	500	“ 17, “
1220	Lafler W. Oakley	463	“	“ 31, “	Falling from engine	1,500	“ 17, “
1222	Thomas Monroe	121	“	Sep, 1, “	Appendicitis	1,500	“ 17, “
1223	William H. Gibson	313	“	Aug. 22, “	Collision	1,500	“ 17, “
1224	Robert J. Lindenbolt	681	Disability	“ 25, “	Amputation left hand	1,500	“ 17, “
1225	Edw. D. Root	330	“	Sep. 23, “	Bright's disease	1,500	“ 17, “
1226	Walter Eversman	582	Death	Aug. 28, “	Collision	1,500	“ 17, “
1227	John Z. Holland	590	“	“ 26, “	Drowning	1,500	“ 17, “
1228	Norris L. Board	502	“	“ 24, “	Crushed between engine and tender	1,500	“ 17, “
1229	Ema Z. Ford	348	“	Sep. 4, “	Heart failure	1,500	“ 17, “
1230	Frank M Fisher	372	“	Aug. 12, “	Falling from moving train	3,000	“ 17, “
1232	Henry K. Baker	13	“	Sep. 9, “	Collision	1,500	“ 17, “
1234	Frank B. Price	104	“	July 20, “	Collision	1,500	“ 17, “
1235	Charles E. Parker	72	“	Sep. 5, “	Run over by engine	1,500	“ 17, “
1236	Henry J. Meldrum	480	“	Aug. 24, “	Strangulated hernia	1,500	“ 18, “
1231	Louie L. Ayres	573	“	July 3, “	Derailing of engine	1,500	“ 25, “
1186	Wm. A. Gaulding	238	Disability	Sep. 5, “	Consumption of lungs	2,000	“ 25, “
1221	Noon Wallace	154	“	“ 16, “	Consumption of lungs	500	“ 26, “

51 death and disability claims, aggregating $76,250.

Pending Claims October 31, 1905.

78 death claims aggregating	**$113,500**
14 disability claims aggregating	**22,000**
Total of 92 claims aggrogating	**$135 500**

* * *



Statement of Death and Disability Claims

Filed with the Grand Secretary and Treasurer During the Month Ending November 15, 1905.

Claim No.	NAMES.	Lodge No.	Death or Disability.	Date of Filing.	Alleged Cause of Death or Disability.	Am't of Ins.
1296	Christian T. Zimmerman	174	Death	Oct. 16, 1905	Collision	$1,500
1297	Millard F. Hunter	510	“	“ 16, “	Cancer of bowels	1,500
1298	Jesse E. Darling	200	“	“ 16, “	Consumption	1,500
1299	Reuben B. Helm	577	“	“ 17, “	Drowning	1,500
1300	William C. Seaman	424	Disability	“ 18. “	Epilepsy	500
1301	Charles E. Jodrey	187	“	“ 19. “	Amputation portion of left hand	1,500
1302	Jesse N. Frost	485	Death	“ 19. “	Appendicitis	1,500
1303	Lewis H. Briley	114	“	“ 19, “	Derailing of engine	2,000
1304	Charles A. Aderton	396	“	“ 19, “	Drowning	1,500
1305	Thomas L. Smith	117	“	“ 19, “	Bright's disease	1,500
1306	William J. McGregor	127	“	“ 19, “	Collision	1,500
1307	John Burrell	276	“	“ 20, “	Congestion of heart and lungs	1,500
1308	LeRoy Bancroft	344	“	“ 21, “	Diabetes	1,500
1309	James S. Adams	218	“	“ 23, “	Collision	1,500
1310	Charles Douglas	287	“	“ 23, “	Strangulated hernia	1,500
1311	Thomas J. Hunter	547	“	“ 25, “	Consumption	1,000
1312	Everitt Griffee	477	“	“ 25, “	Typhoid fever	1,500
1313	William Tebbs	391	“	“ 26, “	Typhoid fever	1,500
1314	Charles C. Murray	333	“	“ 26, “	Pneumonia	1,500
1315	Walter Roe	659	“	“ 26, “	Collision	1,500
1316	Clint Haughtelin	124	“	“ 26, “	Peritonitis	1,000
1317	Charles A. Niles	1	“	“ 27, “	Struck by passing train	1,500
1318	Charles H. Brown	141	“	“ 30, “	Obstruction of bowels	1,500
1319	Henry A. McClain	194	“	“ 30, “	Typhoid fever	1,500
1320	George Cranmer	25	“	“ 30, “	Falling between eng. and tender	1,500
1321	Edward W. Miller	420	“	“ 30, “	Collision	1,500
1322	Fred Bridgeford	605	“	“ 30, “	Boiler explosion	2,000
1323	Harry Summers	560	“	“ 31, “	Derailing of engine	1,500
1324	F. J. Qualman	434	Disability	“ 31, “	Bright's disease	1,500
1325	William W. Slaughter	497	Death	“ 31, “	Cancer of shoulder	1,500
1326	J. C. Murray	182	“	Nov. 1, “	Collision	1,500
1327	Henry Cumbers	127	“	“ 1, “	Typhoid fever	1,500
1328	William Feeney	102	“	“ 2, “	Coal mine accident	1,500
1329	J. W. McClain	94	“	“ 3, “	Boiler explosion	1,500
1330	Ernest D. Wilson	241	“	“ 4, “	Struck by moving engine	1,500
1331	Lawrence Hoey	232	“	“ 4, “	Typhoid fever	1,500
1332	Tracy A. Adams	513	“	“ 6, “	Typhoid fever	1,500
1333	Fred Strong	597	“	“ 6, “	Typhoid fever	1,000
1334	G. V. Marshall	539	“	“ 6, “	Collision	1,500
1335	W. S. Davenport	271	“	“ 6, “	Tumor in brain	1,500
1336	Richard E. Kenney	191	Disability	“ 7, “	Burns	500
1337	Frank Crawford	116	“	“ 7, “	Rheumatism	1,500
1338	David M. May	298	“	“ 7, “	Consumption of lungs	1,500
1339	Charles H. Phillips	641	“	“ 8. “	Amputation of right hand	1,500
1340	Robert S. Watson	121	Death	“ 8, “	Collision	1,500
1341	Jean H. Ratliff	592	“	“ 9, “	Striking projecting rock	1,500
1342	R. D. Brown	377	“	“ 9, “	Derailing of engine	1,500
1343	Oscar Bratford	296	Disability	“ 10, “	Consumption of lungs	500
1344	Peter J. Meeusen	265	Death	“ 10, “	Collision	1,000
1345	Eli Herchelroth	673	“	“ 11, “		2,000
1346	Samuel Scranton	64	“	“ 11, “	Typhoid fever	1,000
1347	Harry E. Sterling	333	“	“ 13, “	Boiler explosion	1,500
1348	Bert H. Sheilds	249	“	“ 13, “	Collision	1,500
1349	George A. Cooke	202	“	“ 13, “	Typhoid fever	1,500
1350	Fred H. Hamrick	622	Disability	“ 13, “	Amputation of right foot	1,500
1351	Burleigh D. Davenport	226	Death	“ 13, “		1,500
1352	R. D. Lamberson	23	Disability	“ 13, “	Sundry injuries	1,500
1353	George W. Thomas	212	Death	“ 13, “	Collision	500
1354	Henry L. Butts	139	“	“ 13, “	Derailing of engine	1,500
1355	O. J. Thompson	442	“	“ 15, “	Neck broken by sand pipe	500
1356	Harris A. Wolever	250	“	“ 15, “	Typhoid fever	2,000

Respectfully submitted,
W. S. CARTER,
G. S. and T.

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Quarterly Dues Notice

Office of the Grand Lodge, B. of L. F.
Peoria, Ill., December 1, 1905.

To Members of Subordinate Lodges:

Sirs and Brothers—You are hereby notified that the dues for the quarter ending March 31, 1906, are now payable, and must be paid to the Collector of your Lodge on or before January 1, 1906. Said dues shall be such an amount as may be determined by the several Lodges, provided, in no case shall it be less than nine dollars and fifty cents ($9.50) for each member carrying a beneficiary certificate of three thousand dollars ($3,000), six dollars and fifty cents ($6.50) for each member carrying a beneficiary certificate of two thousand dollars ($2,000), five dollars ($5.00) for each member carrying a beneficiary certificate of fifteen hundred dollars ($1,500), three dollars and fifty cents ($3.50) for each member carrying a certificate of one thousand dollars ($1,000), and two dollars ($2.00) for each member who shall carry a certificate of five hundred dollars ($500). All beneficiary members now enrolled, and those admitted prior to February 1, 1906, are liable for the dues above referred to. All members initiated during the months of February and March will be exempt from the payment of dues for the said quarter, as provided in Section 171 of the Constitution. Beneficiary members initiated during the month of January are liable for the full amount of quarterly dues for the above quarter. All officers and members are requested to give the foregoing their careful and strict attention, and govern themselves accordingly. Any member failing or declining to make payment as above provided will be subject to the penalty of expulsion from the Order, as per Section 173 of the Constitution, said expulsion taking effect January 2, 1906.

Yours fraternally,

W. S. Carter, G. S. and T. J. J. Hannahan, G. M.

Grand Dues Notice

Office of the Grand Lodge, B. of L. F.
Peoria, Ill., December 1, 1905.

To Members of Subordinate Lodges:

Sirs and Brothers—You are hereby notified that the sum of one dollar and twenty-five cents ($1.25) for semi-annual Grand Dues for the six months ending June 30, 1906, is now payable, and must be paid to the Collector of your Lodge on or before January 1, 1906.

Any member failing or refusing to make payment of his Grand Dues as above required will stand expelled, said expulsion taking effect January 2d. Collectors are required to deliver their returns for Grand Dues, together with the proper statements, to the Treasurers of their Lodges not later than January 5th, and Treasurers are required to forward the same so as to reach the Grand Lodge not later than January 20th, as provided in Section 169 of the Constitution.

Yours fraternally,

W. S. Carter, G. S. and T. J. J. Hannahan, G. M.

Notice to Treasurers

Office of the Grand Lodge, B. of L. F.
Peoria, Ill., December 1, 1905.

To Treasurers of Subordinate Lodges:

Sirs and Brothers—You are hereby notified, as provided in Section 63 of the Constitution, that no beneficiary assessment is required for the month of December, 1905, and that therefore none has been levied for said month.

Yours fraternally,

W. S. Carter, G. S. and T. J. J. Hannahan, G. M.

Notice to Secretaries

Office of the Grand Lodge, B. of L. F.
Peoria, Ill., December 1, 1905.

To Secretaries of Subordinate Lodges:

Sirs and Brothers—Pursuant to Section 173 of the Constitution, you are required to report to the Grand Lodge as expelled all members who fail to make payment of their Quarterly Dues for the quarter ending March 31, 1906, and semi-annual Grand Dues for the six months ending June 30, 1906. The names of said members must be reported to you by the Collector of your Lodge not later than January 2d, and by you reported to the Grand Lodge, as per Section 173 of the Constitution, immediately thereafter. Failing to report the names of expelled members as herein provided, the Grand Lodge will hold Subordinate Lodges liable for their assessments, as per Section 66 of the Constitution.

Yours fraternally,

W. S. Carter, G. S. and T. J. J. Hannahan, G. M.

LADIES SOCIETY of the B.L.F.

FRIENDSHIP — AND — CHARITY

Agnes G. Strong—Editress.

Notice.

All communications intended for publication in the Ladies Department of the Magazine should in all cases be addressed to the Editress, Mrs. Agnes G. Strong, 527 Greene street, Boone, Iowa.

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Christmas Greeting.

My own Christmas greeting to you, dear sisters, I send in Madeline Bridges' little poem:

There are loyal hearts, there are spirits brave,
There are souls that are pure and true,
Then give to the world the best you have,
And the best shall come back to you.

Give love, and love to your heart will flow,
A strength in your utmost need;
Have faith, and a score of hearts will show
Their faith in your word and deed.

For life is the mirror of king and slave,
'Tis just what you are and do;
Then give to the world the best you have,
And the best will come back to you.

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Holiday Greeting.

The Ladies Department extends to its readers the time-honored greetings, "A Merry Christmas and a Happy New Year!" Not from force of habit, either, but from a feeling of interest in your welfare. This is our last number for the year. We have labored faithfully to make our pages interesting and profitable to you, and trust that we have succeeded to an extent. We wish to improve our department constantly during the year to come, and ask your help in obtaining bright, original contributions.

And as the Merry Christmas bells ring in family reunions, the railway trains crowded with children coming home, the table fairly groaning with the good things to eat, be merry, enjoy your feast, but don't forget to send from your table a liberal portion to the table of the poor. Rejoice! Let the whole land be full of chimes and carols. Let bells, silver and brazen, take their sweetest voice, and all the towers of Christendom rain music, and the Ladies Department will join in wishing all its friends and readers a Merry, Merry Christmas!

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From the Grand President.

Auditing Accounts.

Our attention has been directed to a practice which seems to be in vogue in many lodges, wherein the Board of Trustees accepts the reports submitted by Treasurers, showing the balance on hand, without a verification thereof. After the receipts and disbursements have been checked up, the Trustees should require that the Treasurer show the balance on hand, either in a bank or in some other equally safe depository. The fact of the Trustees insisting upon this is no reflection on the honesty of the Treasurer. It is simply good administration and absolutely necessary in order that the board's work may be thorough. It should be borne in mind that lodge funds are trust funds, and that the official relations between the officers should be based upon good business principles. It is to the interest of the Treasurer that the Trustees are in a position to state that on a certain date they examined the books and accounts of the Treasurer and found them correct, and the required balance immediately available. No disbursements should be made, except the payment of grand dues and insurance assessments, unless a voucher or warrant, signed by the President and Secretary, is in the possession of the Treasurer. In the payment of grand dues and insurance assessments to the Grand Secretary and Treasurer the law specifically authorizes the Treasurer to forward the amount due without awaiting the action of the lodge thereon. In the collection of quarterly dues, the law provides that in addition to the amount collected as local dues, which go to make up the general fund for the maintenance of the lodge, there shall be collected the amount due from each member as grand dues or on the current quarterly assessment, or both. This latter amount is merely held in trust by the lodge, subject to the call of the Grand Secretary and Treasurer. Of course, in auditing the accounts of the Treasurer the Trustees should see that the amount thus paid out is not in excess of that due from each member in good standing.

Records and Accounts to be Turned Over to Successor.

An idea seems to prevail among some officers that the books and accounts covering their term of office are their private property, and at the end of their term they can retain them in their possession. The books and records, like the moneys of the lodge, are merely held in trust by the officer, and at the end of her term she is required by law to turn over *all* such books and records to her successor. Of course, the officer has a right to refuse to turn over such books and accounts until she has been officially notified that her successor has been elected and qualified. She can also insist that the transfer shall be made in the presence of the Trustees, who are required to check out the outgoing officer and check in the incoming, and the issuing of receipt provided by law. It would be manifestly improper for an outgoing officer to turn over to her successor a new set of books and retain or destroy the old. In fact, such an act would border very closely on the criminal, as it would give rise to the suspicion that something was radically wrong, and for the purpose of covering it the evidence was destroyed. If we realize that all books, records, papers and money are the property of the lodge and we are merely trustees for the time being, and that we should at all times be prepared to make an accounting, we might save ourselves and the lodge much trouble. The laws aim to protect the Society as well as the individual member. Neither is expected to take advantage of the other. We should render to the other that which is due.

Again, if an officer, such as a Collector, Treasurer or Secretary, is about to leave the city for a stated period, some arrangement should be made for the appointment of an officer *pro tempore*, in order that the business of the lodge may be transacted. Of course, in the case of a Collector or Treasurer the lodge would have to assume all liability for the acts of the temporary officer, provided that she was appointed subject to its approval, which is the only proper manner of making such appointments. The necessary details in connection therewith are no doubt well understood by all, and it will not be necessary to make reference thereto at this time.

Increasing Insurance.

Attention is directed to the provisions of Section 53 of the Constitution, providing how an increase in insurance may be effected. A member fifty years or over is not eligible to take out an additional certificate. The same rules which apply to new members also obtain when an increase is desired in insurance.

Final Withdrawal Cards.

Where a member makes application for a final withdrawal card and a meeting of the lodge is not held until the beginning of a new quarter, such member shall be entitled to her card, providing she is in good standing and no charges are pending against her; and provided, further, that her application therefor has been filed with the Secretary of the lodge on or before the last day of the quarter. The fact of the lodge not holding a meeting on the last day of the quarter is no fault of the member. She is entitled to hold her membership up to and including the last day of the quarter for which her quarterly dues have been paid, as well as such other indebtedness which needs settlement before severing her connection with the Society. At the first meeting thereafter the card should be forthwith granted, and dated the last day of the preceding quarter. For example: A member files an application for a final withdrawal card on the 29th or 30th of December. The lodge will not hold its meeting until January 10th. At that meeting the card can be granted and the Secretary instructed to make the date thereof December 31st, and a report filed with the Grand Secretary and Treasurer, with a statement that application therefor was received prior to the close of the preceding quarter, but action thereon could not be taken until the subsequent meeting of the lodge.

Organization of New Lodges.

We are receiving most gratifying results from the letters which have been sent by the Grand Secretary and Treasurer to the officers of the lodges of the Brotherhood where there is no lodge of the Society established. We are very grateful to the brothers for their prompt and generous response to the appeal which has been made to them, and we hope that the time is not far distant when each lodge of the Brotherhood will have a companion lodge of the Society.

Eligibility of Applicants.

Quite frequently the question is asked, "Can a sister-in-law or a step-child be admitted to membership in the Society?" The language of Section 97 of the Constitution is quite clear, and unless an applicant is the mother, wife, sister, daughter or widow of a member of the Brotherhood of Locomotive Firemen, or one who at the time of his death was in good standing with the said organization, her application can not be considered.

If the members would look up the laws upon the various points it is believed that much needless controversy and misunderstanding would be avoided. The index to the laws is quite comprehensive, so that no one need have much trouble in quickly finding the law covering that particular point, provided that a point of law is involved.

Admission of Applicants.

Our attention has been directed to several cases where lodges have assumed to set aside the laws providing for the admission of applicants and admit to membership as "social" members applicants whose application has not been passed upon by the Grand Medical Examiner, as the law requires. In no case shall the Society recognize the membership of any applicant who has been admitted in violation of law. The only power that can change our laws is the Grand Lodge in convention assembled. No grand officer nor lodge has authority to set aside or to waive the provisions of any law.

Notice is now served upon all lodges that if any of them have on their rolls the names of any "members" who have been admitted in violation of the provisions of the laws governing the admission of applicants, that the Society can not and shall not recognize such membership. Furthermore, any lodge assuming to take such illegal action is liable to be required to show cause why action should not be taken against it with a view to either suspending its charter or revoking it. Our only safeguard is in a strict compliance with our laws. None of them are harsh or drastic. An effort has always been made by the Society to adopt the broadest policy possible consistent with good business administration. It is hoped that if any lodge has upon its rolls such members as above referred to that they will immediately serve notice upon such members that until they comply with the laws their membership can not be recognized. To refrain from taking such action would be practicing deception. Let all moneys collected from such members be refunded and let the laws be complied with in every particular. All applications must first be sent to the Grand Secretary and Treasurer, except as provided in Section 52 of the Constitution, and by her submitted to the Grand Medical Examiner, and notice sent to the lodge of the action taken thereon, before any applicant can be admitted. In the exception referred to in Section 52 it only applies to applicants who are fifty years old or over. G. M. Sargent,

Grand President.

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Visiting the Lodges in Pennsylvania.

On October 16, 1905, beginning with Eureka Lodge No. 112, located at Philadelphia, it was my good fortune to meet with the sisters of the lodges of the State of Pennsylvania. On the evening of the date above mentioned I held a very pleasant and interesting meeting with this lodge, and after the usual lodge business was transacted an adjournment was had for the purpose of meeting socially with the brothers. It was very gratifying to find so many earnest workers in No. 112.

On the 17th I left for Reading, for the purpose of meeting with Lodge No. 160. Here I found a wide awake lodge, and, while it is comparatively new, it has made a record for itself of which it can justly feel proud. In the evening a meeting was held with the brothers, which I am sure was quite pleasant and profitable to all.

On the 18th I met with the sisters of Lodge No. 172, at Pottsville. While this lodge is small in point of membership, I hope that the faithful few will take courage and remember that patience, combined with good work, will in time be rewarded. In the evening a social meeting was held with the brothers, and it was a pleasure to meet with them.

The 19th and 20th was spent at Easton, where I met with the sisters of Triple City Lodge, No. 69. I was greeted with a rainstorm, and everything looked dark and dreary, but the clouds soon passed away. I was greeted by Sister Wilson, wife of First Vice Grand Master C. A. Wilson, who escorted me to the home of Sister Belling, where a hearty welcome was accorded me. After partaking of a hearty supper, we proceeded to the lodge room, where a meeting was held, after which we had the pleasure of the brothers' company. The time passed altogether too fast, and at midnight we departed for Phillipsburg, where I was to be the guest of Sister Wilson. On the day following I met with the sisters of Three Leaf Clover Lodge, No. 169. We had an interesting and enjoyable meeting, at which were present a representative from No. 69 and No. 184, the latter located at Port Morris, N. J. I was well pleased to meet the sisters, as my time was limited, and, though I should have liked to have visited their lodge, it was impossible at this time. The meeting was followed by a very pleasant and enjoyable time with the brothers.

On the 22d I was with the sisters of Wilkes Barre, Lodge No. 140. Here I found a most excellent lodge, whose work is a credit to the Society. After the meeting a good supper was served, at which the brothers joined. This was followed by a debate for the welfare of all interested. My visit to Wilkes Barre was made exceedingly pleasant, and I am very grateful to the sisters for the efforts they put forth in my behalf.

On the 23d I met with the sisters of No. 124, at Pittston. A good meeting was held, and in the evening a social meeting was had with the brothers. Illustrated songs were provided, as well as many other interesting views were shown. We departed very grateful to the sisters and brothers for the many courtesies and kindly acts.

On the 24th I was with the sisters of Lodges Nos. 26 and 180, of Carbondale. A joint session was arranged, and it was very gratifying to me to have the sisters meet as one lodge. It is hoped that these joint meetings will be continued, as they can not help but be fraught with good results to both. In the evening we met with the brothers and had a most enjoyable time.

On the 25th I was with the sisters of Lodge No. 20, at Susquehanna. It seemed like old times to meet Brother and Sister Hogan. I had a very interesting meeting with the sisters, and in the evening had a delightful time at the home of Sister Estabrook.

On the 26th I met with the sisters of Lodge No. 36, at Sayre. A secret meeting was held, which was followed by a joint meeting with the brothers. My visit was made particularly pleasant, and I can vouch for the hospitality which one will find in Sayre.

On the 27th I was with the sisters of No. 23 at Sunbury. The name of the lodge—Friendship—is indicative of the sisters. All are very friendly, and, while this was my first visit to them, I shall always remember it with pleasure. The brothers are deserving of special mention for the good work they are doing in assisting the sisters to further the interest of the lodge. Here I had the pleasure of meeting a member who was formerly Sister Shipe, State Organizer. She has changed her name, and it is hoped that her life will be as Golden as is her name.

On the 28th and 29th I was with the sisters of No. 91, at Altoona. A meeting was held during the evening, at which the work was exemplified. The members of the lodge are to be congratulated upon the efficient manner in which they discharged their duties, which indicates earnest work on their part. They presented the brothers with a handsome banner, which is one of the neatest I have seen. A joint meeting was held with the brothers, which was well attended, in view of the fact that the brothers are very busy at this time. It is indeed most gratifying to visit a city and find the brothers and sisters working jointly and earnestly together.

On the 30th I met with the sisters of Lodge No. 60, at Harrisburg. Here again the lodge work was all that could be desired. Progress is its watchword. A joint meeting with the brothers was held in the evening, which was well attended. All seemed desirous of helping each other. With such feeling prevailing, prosperity can not help but be ever present with these lodges.

On the 31st I met with the sisters of Lodge No. 187, at Columbia. There were also present sisters from Lodge No. 60. As the latter organized the former, its members are still very much interested in its welfare. In the evening a joint meeting was held with the brothers, and a general debate in the interest of all was indulged in. This is very gratifying to me, and I am sure that the little band of earnest workers was very much encouraged thereby.

In connection with these visits I desire to express my sincere appreciation for the uniform courtesy which was shown to me by the sisters and brothers at each point visited. What was most gratifying was the apparent good feeling which existed between the lodges and the desire of each to help the other. At all points an effort should be made to cultivate the friendliest feeling between the lodges, as each can be very helpful to the others.

G. M. Sargent, *G. P.*

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Notes.

Have you read the premium offers in the back of the Magazine, "CHRISTMAS PRESENTS FOR EVERYBODY"? It will pay you to do so if you have not. Either one of the three beautiful crosses that are offered would delight the heart of any of your young lady friends. They can be secured for one, two or three yearly subscriptions at $1.50 each, as designated in advertisement. Write John F. McNamee, Editor and Manager, B. of L. F. Magazine, 806-807 Traction Terminal Building, Indianapolis, Ind., for further particulars.

Whatever is done in this world with a high and noble purpose will liberate beauty and truth in our hearts, and we will thus build our monuments in the hearts of those who know us. And may the world feel our influence and be the better for our having lived in it.

As members of the Ladies Society let us be exemplary ones, doing as little harm as possible and as much good as we can.

The Magazine would like to see what the ladies can do in the work of swelling its subscription list to the 100,000 mark. The present offer is a splendid opportunity, and the Editor and Manager earnestly solicits your help.

Why are you a member of the Ladies Society? Have you thought the matter over? I trust it has not been for selfish purposes, but that you might thereby be better enabled to do good.

Strive to be of some use to humanity. Drop flowers of love and words of cheer and comfort in the pathway of your friends and neighbors.

The two Parisian novelty hat pins offered by the Locomotive Firemen's Magazine for two and three yearly subscriptions at $1.50 each are certainly beauties, and any lady would be pleased to receive one as a Christmas gift. By a little extra work you can secure either one or both.

We are glad to learn that Sister Lou E. Killion, member of Grand Executive Board, is slowly recovering from a serious illness.

Selfishness is the root of all evil, so let us as members of the Ladies Society be true to our vows and cultivate a greater spirit of charity.

Sample copies of the Locomotive Firemen's Magazine will be furnished to any one writing for them. Address all communications to John F. McNamee, Editor and Manager, B. of L. F. Magazine, 806-807 Traction Terminal Building, Indianapolis, Ind.

Through the columns of the Ladies Department we desire to extend our deepest sympathy to Sister Mary Goding, Chairman of the Board of Grand Trustees, who has been called upon to consign to Mother Earth a loving mother.

All items from now on should reach this office by the first of the month to insure being published in that month's issue.

Instruct your Secretary, or some other good sister, or appoint a corresponding secretary, to write the Ladies Department the news of your lodge. Something happens almost every month that would be of general interest to the Order. We want to know what it is in your lodge.

There should be no dissensions in our ranks. Always look over the shortcomings of a sister.

Your attention is called to the fact that the Locomotive Firemen's Magazine is offering handsome hat pins, beautiful lockets, lovely crosses and splendid stick pins for one, two and three yearly subscriptions at $1.50 each. If you do not want the premiums for yourself, remember Christmas is but a short ways off, and no doubt your lady friends would be highly pleased to receive either one of the elegant premiums offered.

The true sister strives to deal justly with all. No spirit of selfishness, no favoritism or partiality will guide her treatment of friend or enemy. Especially will she endeavor to allow no petty personal consideration to influence her action where deciding the fate of a candidate for admission into our Society. On the other hand, she will guard well her vote, that no one may enter who will not certainly, wherever she goes, reflect honor upon our Order. Let us neither selfishly debar others from the privilege of membership, nor carelessly allow entrance to the unworthy.

We should remember our vow, and endeavor to never utter a word directly, or indirectly, uncomplimentary to any one, or to do anything that would shut out one ray of sunshine and happiness from the life of another.

The officers of every Society should become familiar with the ritualistic work, so they can dispatch business in a manner that will command the praise and admiration of all; then there will be no lagging in interest and attendance.

Be liberal-minded; be charitable.

"I will try" does much, but "can't" never does anything. Remember, where there is a will there is a way—and at your next lodge meeting, when you are asked to fill a vacancy, or asked to learn your part, don't say. "I can't," but say, "I will try," and just see how easy it is done.

Pride of 188 was organized September 25, 1905, with 27 names on its charter, and has since added two more new names to its membership. Its number is 201, and located at Chicago, Ill. This new lodge starts out under very favorable circumstances, and we hope that it may take its place among the prosperous lodges of our Society.

Dear sisters, my time, energy and whatever ability I have are yours. It will be my constant aim to work for the best interests of our Order, and to this end I earnestly ask your co-operation and assistance. When you read this article, won't you please write to me, no matter if you are not an officer. I want to hear from you just the same. I want some good suggestions for the advancement of our work, and let each of us ever remember to

"Gently scan our brother man,
Still gentler sister woman;
Tho' they may gang a kennin wrang,
To step aside is human.
One point must still be greatly dark,
The moving, why they did it,
And just as lamely can you mark
How far perhaps they rue it."

If we can not speak kindly of one another, let us practice that lesson of silence. If we have words of love, affection, sympathy or forgiveness, let us not keep them for ears that can not hear, for hearts that can not feel, that do not need them. Speak them now. Let them speed on their mission while the ear can hear and the heart can feel. Speak them today, and in the hour of our need our blessings will return to us an hundredfold.

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From Lodge 75, L. S.

The November issue of the Magazine has just arrived, and the many good things that I found on its several pages has inspired me to write a few lines for the benefit of others.

Lodge 75 is not dead and is not sleeping—not with our worthy President, Sister Mooney, calling on one and another, asking each and every one to do their part in making our lodge a success. And they are doing it, and we are expecting grand, good times this winter.

October was a gala month for our Society. We added six sisters to our membership roll. We received Sister Matilda Lyberger by transfer card from No. 19, we immediately installed her as our Conductress, and she and our Warden, Sister Bullock, took five new members through the mysteries of our Order, and not one fell by the wayside. Sister Lyberger is a thorough lodge worker in every way, and will make its field of usefulness broader. We welcome these sisters into our Order, and gain much by the acquisition of these members.

The President, in a most impressive way, gave the five the signs and secrets of the order in a class. After adjournment we were served with ice cream and cake, and a general good time was had. It was like a family reunion, for so many of our sisters were present, and several of the brothers favored us with their presence and enjoyed the treat with us.

We are still looking for additions to our numbers. If only the brothers would urge their wives, mothers and daughters to become members, and the brothers that have no wives might urge their sweethearts to become eligible to the Ladies Society, just imagine what our membership would be by the time of the Milwaukee Convention in 1906.

From the quiet of summer we merge into the activities of winter work. Please do not think that we have been idle all the summer time. But as the cool weather comes, so does increased activity. We hope to have many social affairs, and anticipate much pleasure as well as profit.

The Angel of Death has entered the home of our worthy Past President, Sister Kiser, and taken her darling baby, and the sympathy of our Society is extended to her in this sore bereavement.

We were greatly disappointed at the union meeting held here September 24th at not having our worthy Grand President, Sister Sargent, here with us. Her presence would have been an inspiration to us. We were delighted in the evening's entertainment by a fine recitation delivered by our Secretary, Sister C. Tripp.

Now, sister lodges, I should like to hear if any one of you can break our record. Let us all waken up and have our membership reach the 6,000 mark before our next convention. Would not that be a good figure to reach by that time? We can do it. Shall we try?

The sister that wrote the lines on "Friendship and Charity" in the October issue of the Magazine has written my sentiments exactly. Our lodge would grow in numbers and in power if there was more friendship extended to the stranger sister who may come within our city, and to the newly initiated members. Sisters, ask your own heart this question, Have I as a member of the L. S. done my part?

Now, for fear that my letter is now far too lengthy, I will close and promise you that you will hear from me again soon.

A MEMBER OF 75, Toledo, O.

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From Lodge 80.

Well, what has become of those magnificent autumn days? Now, to use Longfellow's time-worn, tho' highly honored description, "The days are cold and dark and dreary; it rains, and the wind is never weary." There is a lot more to it, but that much tells the tale, as the railroad boys say. We realize daily as we build "coal fires" that the wind has lulled fair autumn to sleep and soon kind-hearted old winter will spread a beautiful downy blanket over her sleeping child.

Primrose Lodge 80 is not one of the leading ten yet. Sisters, I will acknowledge (honest confession is good for the conscience, you know), the application blank that Sister Patton, our competent Secretary, gave me, is still a blank. However, some of the sisters have been more successful, and No. 80 is having a slow but profitable growth.

Two very interesting and remunerative entertainments have been given our lodge since last month, one at the home of Sister Brawley, in Baring Cross, the other at the home of Sister Dyers. Each was a glorious success, and were it not for taking up more than my share of allotted space in the Ladies Department I should enjoy immensely describing them to you in detail.

The "City of Roses" has been the scene of much gayety since last month. Among the social functions was the visit of the President of the United States. Possibly Little Rock had more visitors on that day than she has had for years. While in the city President Roosevelt, who is an honorary member of the B. of L. F., was presented with a most exquisite bouquet of American Beauty roses, given by Rose City Lodge 45. God bless the Brotherhood boys and hurrah for No. 45! Nothing of importance takes place but this active and up-to-date Order does her part graciously and gracefully.

By the way, Brother Shepherd, since the night of installation of officers we have had no union meetings. We hope sometime in the near future we shall have the pleasure of giving you brothers not a fine time or a banquet, but an opportunity of showing the members of No. 80 what kind of meetings we are having.

We are pleased to note that Sister Pearl Fulmer, one of our faithful members who has been ill for some time, is improving.

At our last regular meeting Sister Harding (who is rejoicing over a "bran" new, beautiful and up-to-date home, on Capitol View Hill) invited the Brotherhood, Ladies Society and their friends to her home on the evening of November 11th for a box social.

With best wishes for our Sister Editress, and the Magazine, we remain yours in Friendship and Charity.

Ora Boon,
Little Rock, Arkansas.

* * *

Our Duty.

Sisters, our duty does not end when the application we have solicited and had voted on for admission, and the initiatory ceremony is over, and her name is registered on the roll as a member in good standing of the Society, although, from the actions of a great many of our sisters, we would be led to believe that this was all that was expected of a sister. Why should we not be more fraternal and let our hearts go out in sisterly love? You can not expect a new member to recognize fraternal duty to her Order without broadening her sympathies and without making her a truer and better and more loving caretaker of her sisters in and out of the sisterhood. May we all be brought to see the beautiful lessons taught by our beloved Society to that glorious end, to always greet our sisters with a warm heart and peaceful mind. Let our hearts go out more in sisterly love.

Each member has pledged herself to do all in her power to extend the Order, add new members, assist in the meeting whenever possible, and to uphold the Order in whatsoever way it may be possible. Yet, how many do not attend, only when it is very convenient for them to attend, and they never think of making a little sacrifice to be present regularly at the meetings. And still, it is an imperative duty to do so, sickness or unavoidable circumstances alone excusing one from attendance. Some may think that they do not have time to attend the meetings as often as they should; so many household cares, etc., but candidly, with a little managing, do you not think that this drawback could be remedied? And is an hour, or perhaps two, every two weeks, much for a housewife to give from her home duties? A housewife needs a change once in a while, and why not arrange to have your spare time on lodge day? Don't you owe it to your Society, sister, and as a protection to your little ones? If you continue staying at home and grow careless about paying your dues, and should wake up some morning to the fact that you were under suspension for nonpayment of dues, and should during the day be stricken with some serious disease or some accident should befall you—think of the result. Come to lodge. We want to see you there. We need your presence there to help conduct the business. How much nicer and more impressive it is to go into a lodge room and find a large attendance, than to find only a few, and it gives the officers of your lodge more energy, for it looks as if their work was appreciated, and the young members are more favorably impressed also when they find a good attendance, and especially when the older members are there to debate the questions at issue.

Our lives are what we make them, and so is our Order. The individual members have in their hands the welfare of our Society. If all work together to increase the growth of their Society, it will materially benefit the entire organization. We can not be good, true members of our Society without being interested in its development. Every loyal member will always be quick to help along the good work we are aiming to accomplish. If we should stop a minute and ask our conscience what we can do to help one of the grandest organizations in the country, then do as our conscience tells us, the Ladies Society of the Brotherhood of Locomotive Firemen would be not one of, but the grandest of them all.

A Member of No. 109.

Syracuse, N. Y.

* * *

Letters from Friends.

From L. S. 112—(*Eureka, Philadelphia, Pa.*) In reading the November issue of the Magazine, I find that the "Letters from Friends" do not contain one from Eureka 112, which looks as if some one was neglecting their duty. We take great pleasure in reading the Magazine, especially the pages allotted to the Ladies Department. In reading the kind words and the helpful messages from the different sisters it seems to bring us closer together and makes the sisters more interested in those societies that we read about. We like to read the letters from the sisters, telling of their trials and how they overcame them, how their membership was increased, and especially pleased to note the great interest the brothers have taken in the different societies. I also notice that it is very often through the efforts of the brothers that new lodges are instituted. The Ladies Society can be and is a help to the brothers; and it is to be hoped that where no lodge is located the brothers will use their influence with the ladies to bring the organization about. And they will realize then what can be done by women when they are organized.

What I especially want to tell you about was the delightful visit of our Worthy Grand President, Sister Sargent. On Monday evening, October 16th, a special meeting was held with Eureka Lodge 112 (it not being our regular meeting night) for the purpose of inspection by our Worthy Grand President. Words are weak to express our pleasure in this visit or to tell with what gratefulness we listened to the kindly words of wisdom and advice and encouragement given us at this time, when the way looked very dark indeed. It enabled us to once more take up our banner and strive to carry it on to victory. After the meeting a reception was given at the home of our Past President, Sister O'Malley. She was ably assisted by the brothers of 75. An elaborate menu was served the guests. We were pleased to have with us the Grand Chaplain of the B. of L. F., Brother Jerry Leaky, a grand old man of 75 years of age.

Our Grand President was presented with a lovely bouquet of roses and chrysanthemums, to which she very fittingly responded.

A very pleasant and social time was enjoyed by all.

While in the city Sister Sargent was the guest of our worthy President.

Best wishes for prosperity to all of our brother and sister lodges.

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From L. S. 33—(*Edna F. Morgan, Paducah, Ky.*) No doubt the readers of the Ladies Department would like to hear from this new lodge, Heartease 33. We were organized on July 2, 1905, by Mrs. Rosa Slaby, of Willing Helpers 76, with seven charter members, and now are in a prosperous condition with a membership of 14, and still have more applications to look after.

Our first social was given July 25, at the home of Brother and Sister Roeder. Ice cream and cake was served and we realized a nice sum for our treasury.

Our next effort along the social line was our first joint meeting, held on September 8th. After the secret meeting, games were indulged in until a late hour, after which we were served with delicious ice cream and cake.

On September 18th was our L. S. of B. of L. F. ball. The brothers are to be commended for the great interest they took in this affair, for the ball was a success in every respect. We feel that we are indebted to the brothers for the large sum we had to place in our treasury.

Having had such a good time at the first joint meeting, we invited the brothers to meet with us on October 17th for a second joint meeting. We were delighted with the appreciation of our efforts, as so many responded to our invitation, and much interest was manifested. Some of the boys are very fine orators and gave some very fine talks on the auxiliary, which was appreciated very much by the sisters present.

After a time spent in entertainment the guests were ushered into the ante-room, where a delicious luncheon was served by the ladies. We sold a beautiful sofa pillow, from the proceeds of which we are going to buy a Bible and present it to the brothers of 238 to be used in their lodge room.

I must not close without telling you that we have the best brothers in the world; they are very much interested and earnest workers for the L. S. They bore all of the expenses of organization and have kindly donated us the use of their hall, which is so convenient to every member to attend. We want to thank the brothers for their extreme kindness.

As this is my first letter to the Ladies Department, I hope it will not tire the readers, and for fear of the waste basket I will close, and will try and write to you again soon. With best wishes for happiness and prosperity to every society.

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From L. S. 139—(*Cora Rusk, President, Pocatello, Idaho.*) We are very much alive and prospering nicely. Our lodge is not great as to quantity, but as to quality we are indeed blessed.

A short time ago we gave a lawn sociable; it was held on the beautiful lawn of our worthy Past President, Sister Jennie Crawford. The brothers and sisters turned out in goodly numbers. The brothers certainly outdid themselves, and were kept busy stringing lanterns and arranging tables and chairs and making themselves useful in general.

We have given two joint meetings, but we do not consider that they were a howling success, not as much so as we should have liked to had them. However, we hope they will be better attended in the future and that the brothers will all turn out in full force.

Our lodge is making a name quilt, and as Sister Crawford is the chairman of the quilt committee she is doing some tall hunting for names to be inserted therein.

Our society is progressing slowly but surely. We manage to have a candidate every once in a while so as to keep the goat from getting too frisky.

Wishing our Editress, Sister Strong, success and best wishes for all our sister lodges, I am, yours in Friendship and Charity.

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From L. S. 10—(*Mary McLaughlin, Elkhart, Ind.*) Helpmate Lodge has been called upon to mourn the loss of a true and faithful member, Sister Ella Goldsworthy. While we bow to the will of our Heavenly Father, our hearts go out in loving sympathy to the bereaved husband and little son and daughter she has left to mourn her loss. Somehow the following lines remind me of our late sister's long and faithful service in No. 10:

"You may break, you may shatter the vase if you will;
But the scent of the roses will cling round it still."

Although the vase that contained the soul of Sister Goldsworthy is more than broken—it has been hidden from earthly view—still the memory of what she has been to our Order will always remain like the scent of the roses to the vase.

Sister, dear sister, your place in our lodge
Can never, no never, be filled;
We miss you at morning, at noon and at night,
With a pain that can hardly be stilled.
Your voice was once music to fond loving hearts,
But now it forever is still;
Oh, sadly we've turned in our sorrow and pain,
From your grave at the foot of the hill.

Sister, dear sister, you've passed from this life
To the home of the pure and the blest;
You've left far behind you the care and the strife
And have entered the mansion of rest.
But the fond, loving lessons and precepts you taught
Forever will live in our hearts,
'Till we meet you at last on the bright golden shore
In a land where we never shall part.

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From L. S. 172—(*Miss Nellie M. Purcell, Secretary, Pottsville, Pa.*) As I read from time to time the letters from the different lodges of the Ladies Society, with enthusiastic reports of various good times, socials, etc., I feel that we would be "octopus," indeed, if we did not "contribute our mite" along that line.

We enjoyed a visit from our worthy Grand President, Sister Sargent, in October, which was of much profit to us, and we hope her visit will be repeated in the near future.

We are still progressing, having five applicants ready for initiation in the near future.

Whilst our worthy Grand President was with us, which seemed only too short a time, we held a short secret meeting. After luncheon we had a very fine musical program, consisting of both instrumental and vocal music.

Our worthy President, Sister S. L. Zeiders, joins with the rest of our lodge to welcome our Grand President with open arms as soon as she can come again.

Hoping that this letter will find its way to the Ladies Department of the Magazine, I remain yours in F. and C.

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From L. S. 49—(*May Henderson, Minneapolis, Minn.*) Twilight No. 49 has not been sleeping, although we have not been heard from for a long time. We are doing fairly well considering our competition. There are three societies in Minneapolis.

I visited the Pride of St. Paul lodge some time since and found that they were doing very efficient work. Also visited No. 31, and they never were in such good condition.

On July 6th I went to Austin, Minnesota, where I installed the officers of Golden Jubilee. This is one of the best lodges in this State, and the sisters are certainly royal entertainers. After the business session was over we spent a pleasant hour getting better acquainted, after which a committee served ice cream. and cake and fruit, and this proved the most interesting part. The retiring president, Mrs. Mattice, presented each sister with flowers. The sick sisters were also remembered with fruit sent by a special committee. On the following afternoon the sisters assembled at the home of Sister Dovenburg, where I was being entertained, and spent a very delightful afternoon. This was a surprise to me. At the close of the afternoon we were invited into the dining room, where all the good things of the sister's cellar and pantry awaited us. At its close one of the sisters in a few well chosen words presented me with a beautiful sterling silver souvenir spoon, a gift from all those present. I appreciated this gift more than I could find words to express and could merely say "I thank you."

I hope that if any of the sisters ever have the opportunity of visiting in Austin, that they will make an especial effort to visit the sisters of Golden Jubilee. They deserve much praise, as they do their work so nicely and such perfect harmony prevails between the two societies, the Brotherhood and the L. S.

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FROM L. S. 33—(*Mrs. T. L. Roeder, Paducah, Ky.*) I take pleasure in writing for the first time for our department. Although recently organized we are doing nicely. A lawn party was held on the evening of July 25th. An impromptu affair, but passed off pleasantly. Every one enjoyed themselves, and we have a very satisfactory balance in our treasury. The brothers of 288 and 165 ably assisted us with the work, and we are very grateful to them. Their exertions should arouse the interest of our members. With our present corps of enthusiastic officers, we are expecting quite a boom in our membership.

Best wishes for the success of the Brotherhood and the L. S.

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FROM L. S. 137—(*Winifred V. Baker, Colorado City, Colo.*) Thinking possibly that the brothers and sisters at large think that we are dead, I will just write you and let you see for yourselves that we are not. We are very much alive and still taking in all of the new members we can as soon as they become eligible, and in every way doing all that we can to help the brothers of whose lodge we are auxiliary thereto, for we think the boys of No. 218 are the only people.

We give our third annual ball November 29, 1905, and we are all busy arranging for same. We expect to (as we always have done) make it a grand success.

Now, sisters, let us work as never before for the good and welfare of the Ladies Society and be more loyal to the great Brotherhood in whose interest we labor, than ever before.

Practice the teachings of our beautiful motto, "Friendship and Charity," and then you will have filled your every obligation.

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FROM L. S. 181—(*Secretary, Shawnee, Oklahoma.*) It is the wish of the sisters of this lodge that I write a letter for publication in the Ladies Department, and if this first attempt does not find the waste paper basket you will hear from us soon again. Our lodge has not been heard from for some time, but we are prospering and in a flourishing condition.

Our retiring president, sister Sarah Green, presented our society a beautiful Bible for our lodge room, which will be an ever present reminder of the faithfulness of our first President. We thank Sister Green for her pretty gift and shall always try to use it in a worthy manner.

At the box social given Saturday evening, August 12th, we cleared a neat sum for our treasury and all present report a very enjoyable time.

Saturday evening, September 23d, we were very agreeably surprised by the brothers of Shawnee Lodge, No. 602, at a joint social session, which was thoroughly enjoyed by all present. Music and dancing were the chief amusements for the evening. At a late hour light refreshments were served, and to say that the brothers are royal entertainers is expressing it mildly. All departed hoping to meet the brothers at many more joint socials.

Our lodge has twenty-seven members and one candidate for initiation at our next meeting.

At present we are very busy preparing for our second annual ball, to be given Thanksgiving eve.

Wishing success to all sister lodges we remain yours in F. and C.

FROM L. S. 64—(*Mrs. Oiata Dillon, Denver, Colo.*) No doubt, sisters, you have been wondering if Columbia L. S. No. 64 is still alive, and we beg to inform you that we are very much alive.

Over half of our membership are living out of the city, but those remaining are every one valiant workers.

As winter advances, we are planning our season's entertainments. No. 64 is considered one of the very best entertainers of East Denver, and we feel very proud of our reputation indeed.

Our brothers of 77 are always kind and thoughtful and ever ready to lend a helping hand.

We are in hopes that every brother of 77 with a wife, sister or mother will encourage them to join us; we want every eligible person to join us, for we know the benefits to be derived from being a member of the Ladies Society.

Our hearts are saddened by the death of Agnes, the ten-year-old daughter of Brother and Sister Lehman. Sister Lehman is our worthy President and one of the best workers in our society. This little daughter was a loving, patient little sufferer, and will be greatly missed from among us.

We extend our deepest sympathy to the bereaved father and mother and commend them to the All Wise Father who doeth all things well.

We wish to extend our best wishes for success to all sister lodges and to the noble Brotherhood of Locomotive Firemen, in whose interest we are organized.

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FROM L. S. 10—(*Sibyl Peyser, Elkhart, Ind.*) The death angel has entered our midst and taken our beloved sister, Ella Goldsworthy, on Saturday evening, September 23, 1905, after a long illness of consumption. She was a charter member of Helpmate Lodge and a staunch, loving sister and a faithful worker, having filled the office of Secretary for several years and still held that office up until the time of her last sickness. She was always at all of the meetings and was ever thinking of some way in which to further the Order she loved. She went as delegate from our society to the Chattanooga Convention, and no doubt many who were there will remember her. She leaves a husband and two children, besides a mother, brother and sister and a host of friends to mourn her loss.

The members of the Helpmate Lodge, together with the ladies auxiliary to the B. of L. E. attended the funeral, and accompanied the remains to their last resting place at Ligonier, Ind., which was her old home.

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Death Report.

Ella Cleaveland.—Lodge 118; died October 14, 1905; cause, puerperal fever. Insurance, $200.

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Grand Dues Notice.

GRAND LODGE
LADIES SOCIETY OF THE BROTHERHOOD
OF LOCOMOTIVE FIREMEN.

Office of the
GRAND SECRETARY AND TREASURER.

BOONE, IOWA, Dec. 1, 1905.

To all Subordinate Lodges:

Sisters—Pursuant to the requirements of the laws, you are hereby notified that the amount of fifty (50) cents for Grand Dues, for the six months ending June 30, 1906, will be due and payable by all members whose names appear upon the rolls of membership January 1, 1906, to the Collector of the lodge, on or before January 1, 1906. The Collector is required to deliver the amount thus collected, together with the proper statements, to the Treasurer of her lodge not later than January 5, 1906, and the Treasurer is required to forward the same so as to reach the office of the Grand Secretary and Treasurer not later than January 10, 1906. Fraternally yours,

MARY E. DU BOIS,
Grand Secretary and Treasurer.

Approved:
GEORGIE M. SARGENT,
Grand President.

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